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GEOGRAPHY AND TOWN PLANNING

W. G HOLFORD*

THE planning of towns, as a civilised art, is as old as civilisation itself; as old as geography, which was certainly more of an art than a science in its early days; as old, or perhaps nearly as old, as astronomy; but not as old, of course, as politics, which learnt how to make use of chaos long before it could explain it.

But Town Planning, as a profession, is comparatively young. In a sense it has come into being to control abuses, as part of a co-ordinated system of self-government. The same might be said of the Prisoners' Aid Society, or the Royal Society for the Prevention of Cruelty to Animals. Unlike these, however, town planning is not a partial, sectional, or intermittent activity; it is the whole, continuous organisation of that physical shell in which we live and work and pause—occasionally—to reflect. For urban growth touches every country dweller as well as every town dweller in these islands, and indeed in every industrialised nation. And so all are involved.

THREE ASPECTS OF TOWN PLANNING

Town planning is thus an æsthetic activity; it involves creative design, architecture, the humanised landscape; questions of taste and selection; colour and mass and form. Without this creative element town growth would still occur, but the word "planning" would have no meaning.

It is also a social activity. And so the science of enquiry is involved. Without this scientific approach to the subject, architecture and engineering remain as examples of abstract art—cold, formal, expensive and subjective. The study of the environment itself, of land, of climate, ecology and the urban scene, and of the interaction between man and his environment (which is the geographer's particular province), is an absolutely essential preliminary to the planning of any real improvement to our apparatus of living, and even to the intelligent preservation of the assets we already have. Without a working knowledge of causes the town planner can only argue about effects; in which he differs very little from the amateur painter or the stage manager in a pantomime.

From another point of view, town planning can be seen as a branch of town government, and thus allied to administration and law. In this way the social sanctions are codified, the controls are systematised, and some degree of equity is maintained between landowner and householder, between public and private enterprise, between the planners and the planned. Here again, without preparatory surveys and considered criticisms the system may harden into a senseless routine, eventually resulting in that curious form of post-war myopia—queuemindedness.

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* Professor Holford is Head of the Department of Town Planning, at University College, the University of London. His lecture was delivered to the Annual Conference of the Association on 3rd January, 1952.

THE SCIENCE OF ENQUIRY

You will appreciate that town planning ranges from the product of the artist at one end of the scale to the regulations of the administrators at the other ; and that if it is viewed primarily as a social activity there are evident dangers when the pendulum swings too far towards either extreme. It is therefore of some interest to examine the middle of the field, where the centre of co-ordination may be supposed to lie, and where the geographer may be expected to play his part.

Now I am no geographer ; but I have listened to many, and read what others have written about this side of their many-sided subject. And before coming to you this morning I have consulted old friends, former colleagues, planning and research officers and present students, all of whom *are* geographers. We have stood and gossipped—so to speak—on either side of the neighbourly post-and-wire fence which marks (rather haphazardly) the boundary between our respective spheres of interest ; and perhaps our feet have trodden down one or two of the lower strands in the process, making the fence more imaginary than real ; which will do neither of us any harm. So, if you see some pale reflections of your own views in the picture I am putting before you, it is because I have listened to Professor Fawcett and Professor E. G. R. Taylor, Professor Stamp, Mr. A. E. Smailes or Professor J. A. Steers, or because I have worked with Dr. E. C. Willatts and F. H. W. Green, or because I have quite lately discussed the matter with one of the post graduate students at University College, Mr. Paul Vafidis.

Arguing further from the Schuster report on the Qualifications of Planners[1], I came to the conclusion that geography and town planning are respectively the reconnaissance and the tactical aspects of the same process of environmental control. And I feel it is due to you—as well as to Sir Ernest Gowers[2]—to put that statement into plain English.

Geography itself is a co-ordinating subject, and the recent establishment of the honours schools in British Universities places it, with others of the social sciences, among those contemporary and complex groups of studies which embrace the sciences as well as the humanities. Some geography schools are in two or even three "faculties" ; and it is not merely by chance that two of their main functions should be further research and education. Method, and not intuition, is the key to the geographical approach to problems of land use planning. And, as I see it, the task that faces the majority of the members of this Association is how to explain that approach to schoolchildren, to university students, to local and central government officers and—most of all—to politicians, big and little.

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[1] *Report of the Committee on Qualifications of Planners*, H.M.S.O., Cmd. 8059, October, 1950.

[2] *Plain Words*, H.M.S.O., 1950. *ABC of Plain Words*, H.M.S.O., 1951, by Sir Ernest Gowers.

Now town planning is also a process of co-ordination; it is a way of doing things in order to achieve a result more significant, more pleasing, more convenient than would come of *laissez faire.* If geographers and economists and sociologists will give him ammunition of the right calibre, and the law a licence to shoot, the town planner will engage. Gone are the days when an individual could descry his target, make his own ammunition, and fire it off. It is now a combined operation. And similar though it is in many ways to a military campaign, it has one curious difference: the targets are always changing.

CHANGING OBJECTIVES

Not only do the detailed objectives vary from time to time but, as George Orwell prophesied in his terrifying novel *1984*, the enemy changes completely while the battlefields remain the same. At one time the battle-cry is "Plan Boldly: Reconstruct our Cities"; then it is "Export or Die." The latter is soon followed by the salvage slogans, "Save Fuel, Save Steel, Save Transport"; and in the lulls between the crises the clarion calls are sounded—"Decentralise," "Clear the Slums," "Preserve the Countryside," "Keep Death off the Roads."

The public are sometimes bewildered by these changes of front; which are in fact the perfectly natural outcome of changed circumstances, and of changing ideas as to what constitutes the good life. In Britain, from 1934 onwards it was the fact of unemployment, and the Special Areas legislation which evolved from it, that was the real basis of planning. And it was the geographer's contribution, in such surveys as those for the North-East Development Board in 1936[3], which should have been directly reflected in building and planning proposals all over the country. But the lesson was learnt very slowly. The Distribution of Industry Act was not passed until 1945, and even now the policies of the Board of Trade and of the Ministry of Housing and Local Government share, somewhat uneasily, a double bed.

Meanwhile, individual happiness was represented by houses along the roads selling for £595, or £50 down and the rest by instalments. Or by a week-end cottage, whose former agricultural tenant had left the land and thus made it available—when modernised—to what Professor Stamp calls "the adventitious country dweller."

To-day we are facing a different form of economic crisis. I cannot think of a better description of our state at present than that given quite unconsciously by a good friend of ours, a Lancashire housekeeper, who always referred to a certain charitable institution as "Reduced Gentlefolk living in Circumstances." We are in truth living in circumstances." Happiness is now the emotion felt by those at the very top of the Council's housing list. And we have got a great deal of pleasure, and some edification, from the Festival of Britain of 1951.

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[3] G. H. J. Daysh, *Survey of the Industrial Facilities of the North East Coast*, Newcastle, 1936. See also *Studies in Regional Planning*, London, 1949; edited by the same author.

And underneath, the essential planning problems have changed too. They include defence, and the location of special industries and airfields, and opencast mining for iron-ore and coal. They ought to include also the reduction of the sum of journeys to work—particularly at peak hours—and a corresponding increase in the standards of road safety. They certainly include New Towns, but not whole-heartedly enough ; and they should be intimately concerned as well with food production and its attendant requirements in the way of rural housing, land drainage and water supply.

So it is no wonder that planning targets alter from time to time. Do the methods of approach vary also ?

The Planning Approaches

I think the answer is that they do, but do so much more gradually. The interesting fact about the history of town planning in this country, as a profession or a career, is that it has moved on the whole from concrete problems of small compass towards more generalised problems of considerable extent. It was a criticism of the " old planning system " even under the Act of 1932, that it was local and piecemeal in its application. And the powers under the " new planning system " of the 1947 and subsequent Acts, are really extensive.

Town planning was very largely architectural in its origins during the first decade of this century—in which I include civil and structural engineering, garden design, and estate management. That is to say it was concerned with buildings, the relations between buildings and the subdivision of plots of land, services and utilities, street decoration and furniture, and the regulation of these matters under codes of building and estate development. There were of course, notable exceptions—such as Patrick Geddes—who thought of town planning in much more synoptic and social terms. But the average activity was the piecing together of individual sites to form a composition.

The geographer, on the contrary, tended to approach the problems globally. He tended to analyse them in terms of broad movements, trends and principles ; to look for causes and effects but never to chance his hand at a programme or a specification.

Now comes the universal requirement under the new planning system in Britain for " Development Plans " to cover every square mile in these islands. And here architect and geographer, designer and social scientist, promoter and analyst, must surely meet.

Most of you must know what Development Plans ought to contain ; but if you do not, the Ministry's *Circular No.* 40 will give you a check-list. And from this you will see that a Development Plan is largely a geographical assessment of the use and potentialities of a stretch of country. The larger the stretch, and the more truly regional the area, the more geographical in character the exercise is. The more urban, more detailed "Town Maps" (which form part of the development plan) are on the other hand more architectonic in form. They are closely concerned with traffic and building accommodation, yet involve many of the techniques of urban geography at the same time. (The Planning Officer for Middlesex has just published under the Ministry's sponsorship, a pamphlet called *Development Plans Explained*[4] which describes for layman, councillor, schoolteacher and householder how a Development Plan should work as the instrument of local and central government.)

The Development Plan, in short, demands a combination of the geographer's approach with that of the designer—the science of enquiry with the art of space-relationship. But where the territory is large and the problems long in term the geographer can make the greater contribution ; where development is more concentrated and the problems of circulation and accommodation are more immediate, the architect, the engineer, the surveyor and the finance officer have more to do.

Geography as a Basic Training for a Town Planning Career

At this point you might ask me whether geography is a suitable basic training for a town planning career. In theory I have no doubt whatever that it is. In practice I think—and hope—that it soon will be.

I am bound to add that at present the opportunities are limited. This is so for two reasons. In the first place we are learning the range and limitations of the subject as we go along. Seldom in history has a country pledged itself to complicated legislation on a subject about which so little was known in practice. From 1943 until 1950, assisted by public reactions to the war and to the accumulation of pre-war propaganda dating from the time of the 19th Century social reformers and Ebenezer Howard, we put onto the statute book all the powers and prescriptions necessary to set about the task ". . . of consciously regulating the setting of the social and economic life of the nation." (I quote paragraph 217 of the Schuster Report.) And of course it will take time to admit the other practitioners of the social and economic sciences into the framework of a professional organisation set up and administered by architects, engineers, surveyors and lawyers. There is nothing die-hard or dog-in-the-manger about this ; a professional association with a corporate life and standards of its own cannot be created by decree ; it must exist and change by the goodwill and commonsense of its members. Like all democratic institutions it can only change gradually and without losing strength in the process.

It is significant meanwhile that more geographers each year consider it worthwhile to take town planning courses and qualify by examination. This is now possible (under slightly different conditions) at Liverpool and London Universities and at King's College, Newcastle.

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[4] B. J. Collins, *Development Plans Explained*, H.M.S.O., 1951.

The second reason for a shortage of opportunity for the geographer in planning is rather more serious. We are in a difficult situation economically, and the political mood of the country favours production, productivity and payment by results. In such a mood the very word " research " is enough to start a witch-hunt, and the kind of long-term thinking about land utilisation and land settlement and industrial location, which the geographer is trained to do, is drastically discounted. Except in recognised eduational posts, the geographer only too often finds himself regarded as a luxury—useful, but disposable in an emergency. And instead of being used for more intensive efforts, his channel of communication with the administrative and executive sections of his department or authority is choked, or cut off altogether. So I cannot suggest at the moment that there are planning jobs for geographers in central or local government, or with public authorities and companies, which are waiting to be filled. But I am sure the opportunities will open up again. Planning itself is subject to severe cuts in manpower. Even the Ministry has changed its name.[5]

Meanwhile, even if research is driven underground in terms of the national effort, many academic and independent wells can be filled up by it. If it is useful research it will keep ; not for ever, because of the changing outlooks that I referred to before, but long enough to be extremely useful when the time comes sooner or later to apply it.

I can say for certain, from my own practical though limited experience of town planning in this country and abroad, that there is always far more unknown than known about the essential data for most planning operations ; and worse still the plans have to be prepared with some of those questions still unanswered. For many of these questions a geographer could find, or help to find, the requisite tests and information. The simplest way is to have him working with you. In studying the City of Cambridge and its place in the County, my partner and I had this kind of help from Windyer Morris and other geographers and it was invaluable.

There are in addition a number of studies that could have immediate and practical application once they have been compiled or published, which can be carried out independently. I'm afraid that even if I talked all morning I could not do justice to them ; so I will only mention a few, which are in the field of town planning rather than of regional planning. For the latter I would recommend you to a very thoughtful and useful paper, with a list of publications attached, which Dr. Willatts wrote for the International Geographical Union, on "The state of Regional Planning in Great Britain and the geographer's contribution to it[6]."

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[5] From Ministry of Town and Country Planning (set up in 1943) to Ministry of Local Government and Planning (1950), and then in October 1951 to Ministry of Housing and Local Government.

(i) Among the most important aids to urban planning are studies of *spheres of influence, hinterlands or urban fields.* In particular the determination of the size, character, rate of expansion, purchasing power and land values of the central area of a town. This is important for : (*a*) existing towns, which are subject to planned expansion like Aylesbury, or Huyton (near Liverpool) ; and (*b*) new towns, such as Harlow or Corby, where difficult estimates have to be made of advance development.

(ii) Studies of *the communication network* in a region or even in the environs of a town. This is necessary from the geographer's viewpoint (particularly in relation to the location of industry and employment) as well as from the angle of the traffic engineer and the policeman.

(iii) *Survey techniques ;* with special reference to the saving of manpower.

(iv) *Urban land reclamation ;* including studies of mineral and industrial reclamation and restoration, such as those made by S. H. Beaver in the Black Country ; of land going out of development, a quite uncharted field at present ; and of such superficial land features as sand dunes, marshes, headlands and slopes too gullied or too steep to be built upon.

(v) *Microclimate* and its effect on types of site development.

(vi) *Planning presentation ;* in particular the form of : (*a*) factual record maps ; and (*b*) display maps ; which will serve to interpret at these two levels the statistical, demographic and social data which planners have to digest and which laymen have to comprehend *visually* as well as mentally.

(vii) *Historical development of particular towns.*

I have suggested that this kind of research can be "banked" for a time, awaiting application ; in much the same way as the "shelf of public works" was prepared under the New Deal against a period of industrial unemployment. But in order to be preserved, it must have no useless fatty matter in its composition. It must be accurate and reliable. Many wordy battles have been fought over planning proposals and planning enquiries in recent years in which all parties have laid hands on the nearest argument and hurled it with as much energy as they could muster, at the opposing forces. Perhaps the word "battle" is too dignified a name for these proceedings. They are more in the nature of mob skirmishes ; and research workers in the social sciences must have endured a great deal of silent agony.

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[6] Report to the Commission for the Study of Regional Planning, International Geographical Union : a personal contribution by E. C. Willatts (Great Britain) 1951, of which a typescript copy in English and the unpublished bibliography is held in the library of the Geographical Association.

But their time of justification will come. The rising generation of schoolchildren and students will be the councillors and committee-men of to-morrow. They will be the patrons of public architecture, civic design and housing ; the arbiters of the development plans, and the teachers of those who follow. Geography, though liable to slumps and underestimation as the foundation of a professional career, is—and will increasingly become, I think—a recognised basis for citizenship.

Not only in the countryside, where voluntary workers, ramblers and students are making useful surveys of such walks as Offa's Dyke and the Pennine Way, and of the commons and footpaths which are once again becoming a conscious part of the public's inheritance ; but also in towns, where schoolchildren are learning the fascination of the shopping survey, the simple traffic count, the chart of the journey to work and to school, and the reading of maps and plans, this geographical approach is going to lead to a more humane, and at the same time, more competent use of planning as an instrument of social policy.

THE CLIMATE OF NIGERIA*

Ronald Miller†

We have long been accustomed to brief statements of the climate of Nigeria which utilised the main concept of a north and south oscillation of the equatorial low pressure belt, sometimes called the doldrums, in sympathy with the movements of the overhead sun. Later, the idea of a monsoon was invoked and the mechanism of the climates thought of as a grand reversal of the air-currents in response to an alteration from high pressure over the Sahara in winter to low pressure in summer. In both cases the climates were recognised as featuring a well-marked contrast between rains in summer and drought in winter, the length of the rainy season diminishing with distance from the coast. The coast was regarded as having a twin rainfall maximum—the " equatorial " régime—while the interior, with only one maximum, had a " tropical " régime.

With the 1939–45 war came a greatly intensified interest in West African meteorology since Nigeria was crossed by the great Allied air transport route along which personnel and freight were moved and new aircraft ferried to the Middle East threat of war. More meteorological stations staffed by trained meteorologists were established, and for the first time forecasting and active research was begun. Since the war, civil aviation has remained sufficiently important to justify an independent metorological service in Nigeria and we may look forward to much greater understanding of the atmosphere there as data and experience accumulate.

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* Based on part of a paper read to Section E of the British Association at its Edinburgh Meeting, 1951.

† Dr. Miller is Lecturer in Geography in The University of Edinburgh ; as Education Officer in the Northern Provinces, he was resident in Nigeria from 1936–46.

What then are the new ideas that have arisen about the meteorology of Nigeria ? Firstly, as in other parts of the world, the accumulation of data from atmosphere soundings supports the conception of air masses with fronts between them. In the case of Nigeria two main air-masses are involved, clearly recognisable as the former Monsoon and the Harmattan but now styled Equatorial Maritime and Tropical Continental air respectively. The front between them is part of the I.T.F., the Intertropical Front. We may note that in the Nigerian area it displays the unusual feature of remaining north of the equator all year. It oscillates, but only in the nothern hemisphere, whereas in most other parts of the world it swings into the southern hemisphere when the sun is in Capricorn. The cause of this unusual behaviour over the Gulf of Guinea is to be found in the distribution of continent and ocean peculiar to this part of the world. Now, as is well known, the strength of the geostrophic force which deflects a wind away from the barometric gradient is proportional to the sine of latitude and is thus negligible in very low latitudes. Consequently the I.T.F., in its oscillation over Nigeria from latitude 12° or 13° in the north of the country nearly to the equator, generates very different weather at the opposite ends of its swing. When nearest to the equator, i.e., in winter, deflection is almost zero and frontal weather is very weakly developed. In summer, on the other hand, energetic I.T.F. weather is caused. Thus, even though the Harmattan may reach the coast in winter, little or no disturbance is caused. This Tropical Continental air is by its origin in the Saharan anti-cyclone strongly subsident ; its advance into lower latitudes and descent from the African plateau to sea level also tend to increase its stability. Consequently, when it reaches the Gulf of Guinea, which it usually does for a day or two every year, winds are light and variable and there is of course no precipitation.

The broad vertical distribution of the air masses is shown on Fig. 1. There it may be seen that only two masses, Harmattan and Equatorial Maritime, are in contact with the ground, so only these are of direct climatic interest. The Westerlies are simply the anti-trades but the Equatorial Easterlies are more difficult to understand. They appear to be closely related to the Harmattan, differing chiefly in their higher humidity. It may well be that the Harmattan and the Easterlies are essentially the same current, in the former case comprising air derived from the Sahara, in the latter from the Indian Ocean. It would appear that we must await information from further soundings, to enable us to understand the meteorology of Nigerian climates.

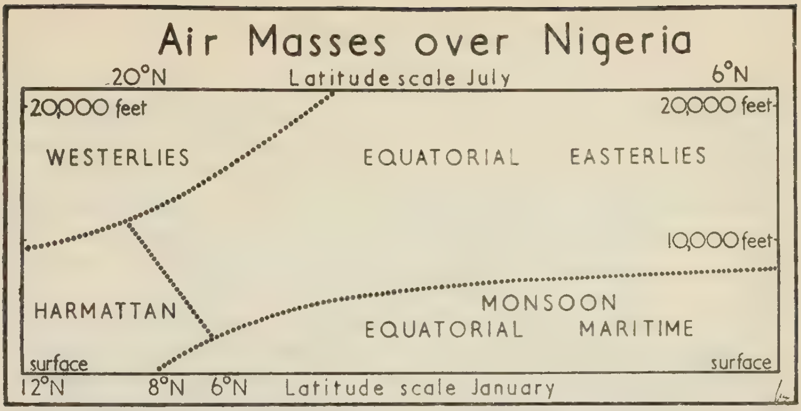
HARMATTAN

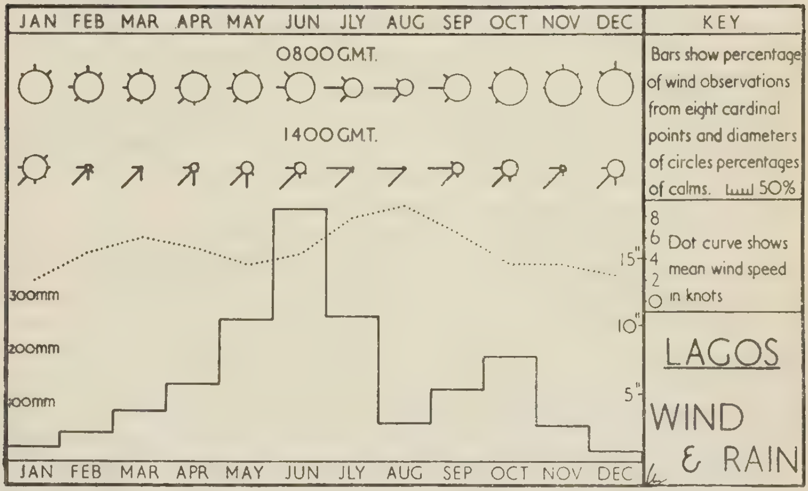
This is perhaps a suitable point at which to observe that the Harmattan is often spoken of as the redeeming feature in the climate of Nigeria and indeed of West Africa. True, it has one good feature—it brings cool nights ; one snuggles into bed under three blankets and probably gets better sleep and therefore more rest than at some other seasons, but the air can often feel just as cool in rainy weather. The excessively low humidity of the Harmattan is on almost every count a bad property. It is uncomfortable ; it first attacks the mucus of the nose and throat and in some people may cause a catarrh which lasts till the air recovers its humidity. With lower humidities the lips, skin and even finger-nails crack. The majority of Africans assustomed to going barefoot, have developed on the soles of their feet skin that may reach half an inch in thickness ; when this cracks under the influence of the Harmattan, it may cripple a man quite considerably and fail to heal till the rains return. The load of dust which the Harmattan brings from the interior of the continent makes everything filthy and the sky becomes dull and oppressive as on a "November" day in Britain. A heavy season of Harmattan in the Northern Provinces generally culminates in a serious outbreak of cerebro-spinal meningitis which kills and maims thousands of young people. The connection may not be direct, but it appears to be none the less genuine. In the plant world, Harmattan is comparable to frost in higher latitudes, blighting, checking and even entirely destroying growth. It has a secondary effect too, in that it greedily evaporates all available water and so dissipates much of the precious stock of moisture held in the soil over which a crust may form which no ordinary hoe can deal with.

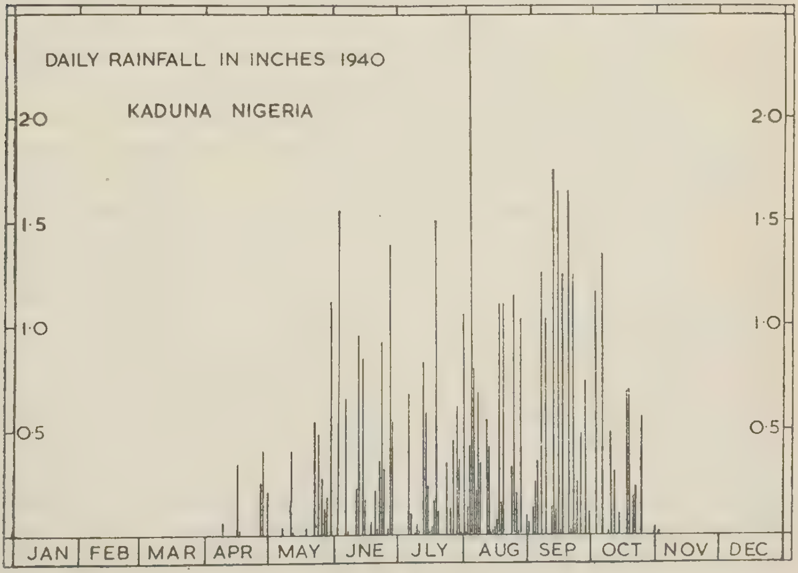
Leather, paper, wood and even plastics suffer from the extreme dessication ; woodwork comes apart at the joints and may even collapse and all kinds of inconvenience and expense may be caused by warping. Poor qualities of paper become brittle and may disintegrate like a piece of newspaper scorched in front of a fire.

We must remember then that it is only on the coast, where it arrives in a very attenuated form and for only one or two days in the year, that the Harmattan is ever entitled to complimentary names like "the Doctor."

Even in midwinter when the Harmattan is strongest the I.T.F. may swing inland over the coast, and while frontal-wave weather may not occur, the passage of wind over the land, however low the latter may be, often creates sufficient instability to cause rain so that the coast, in fact, has no real dry season. Since the Harmattan is so dry and extends over the Monsoon air, stable conditions are found at the actual junction of the air-masses and it is not till some 100 miles south of the front that typical I.T.F. weather occurs.


Air Masses over Nigeria
20°N
Latitude scale July
6°N
20,000 feet
20,000 feet
WESTERLIES
EQUATORIAL EASTERLIES
10,000 feet
HARMATTAN
MONSOON
EQUATORIAL MARITIME
surface
surface
12°N
8°N
6°N
Latitude scale January


JAN FEB MAR APR MAY JUN JLY AUG SEP OCT NOV DEC
0800 G.M.T.
1400 G.M.T.
300mm
200mm
100mm
15"
10"
5"
KEY
Bars show percentage of wind observations from eight cardinal points and diameters of circles percentages of calms.
50%
8
6
4
2
0
Dot curve shows mean wind speed in knots
LAGOS
WIND & RAIN


DAILY RAINFALL IN INCHES 1940
KADUNA NIGERIA
2·0
1·5
1·0
0·5
JAN FEB MAR APR MAY JNE JLY AUG SEP OCT NOV DEC

Figs. 1, 2, and 3.

RAIN

With the spring, the I.T.F. begins to move north in response to the pressure changes set up by the altered temperature distribution as the sun crosses the equator and moves towards Cancer. The rainy season begins and sweeps progressively northwards. Three principal rain-producing conditions can be recognised, orographical, convectional and frontal. Considering first the orographical we may note that rain occurs (*a*) where the coast is crossed most obliquely ; (*b*) on the edge of the Cameroon plateau and particularly at Debunja which records the world's second highest mean annual rainfall, 375 inches ; (*c*) on the southwest side of the plateau and to a lesser extent on the slopes up to it from the Niger ; (*d*) round Biu. A corresponding rain-shadow effect occurs in Bornu and possibly in the Benue valley. Of great interest, also, in this connection, is the diminution of rain in the southwest in mid-summer. It may be that this should be regarded as perfectly normal—a twin maximum due to the double passage of the I.T.F. If this is so, then an explanation is necessary for the absence, or much poorer development, of this little dry season in August in the southeastern quarter of Nigeria.

The situation at Lagos is shown on Fig. 2. Morning and afternoon wind directions are given as an illustration of the marked land-and-sea-breeze effects at this station, but the wind speeds are means for the whole day. By March the southwest wind is strong and steady by day. Rainfall totals increase with a more southerly component in wind direction, but by June, when maximum rain occurs, wind direction is swinging strongly to the west. When, in August, the wind reaches a maximum velocity for the year and is markedly westerly by night as well as by day and calms are at a minimum for the year, precipitation drops to only a couple of inches for the month. This drop is of course not surprising, since a westerly wind, owing to the configuration of the coast, enormously increases the effective distance of Lagos from the sea. After August, wind velocity falls off, it backs to a more south-westerly direction and brings the minor rainy season.

If this swing of the wind from southwest to west occurs all over southern Nigeria—the writer has not had an opportunity to confirm this—it should bring increased orographical rain on the west of the Cameroon plateau. Fig. 5 (August) shows that this does in fact occur, and it would appear that this rainfall element more than compensates for a decrease in frontal rain due to the northerly displacement of the I.T.F. ; the rainfall graphs for the extreme southeast of Nigeria (Fig. 8) show only a single maximum of rain.

Whatever the reason for this single maximum its repercussions are very important. The area in the southwest of Nigeria which has a long rainy season with a respite, but not a drought, in August, enjoys a climate which, by using *both* early and latter rains permits the cultivation of wet-climate crops like yams ; but which can also yield two harvests, one in August and another in November, of crops like cotton, groundnuts and maize that require only a shorter growing period. No small measure of the material prosperity and high cultural level of the Yorubas must be attributed to this fortunate climatic position.

In the extreme southeast however, rainfall totals pile up far beyond the requirements of any crop and merely serve to impoverish the soil by leaching, to render housing difficult, and to encourage the growth of moulds on stores, particularly of food.

TORNADOES

In addition to orographical rain, convectional rain is often formed, mainly by local over-heating, but the principal source of rain is the overturning in frontal storms.

These storms are the so-called tornadoes peculiar to West Africa and are not to be confused with the much more violent true revolving storms of the same name in the New World to which they bear no dynamic resemblances whatever. However, the name is now confirmed by use in West Africa, though if the meteorologists wish for a distinctive name they have one to hand in the Hausa "Hadari" and its close relative the "Holoko," a storm which is only wind without rain.

For long a mystery, these storms are now better understood. The Disturbance Line, a front which may be upwards of 500 miles long, appears from the east, generated we know not how but presumably by a conflict between the Easterlies (? Harmattan) and the Monsoon and moves west-southwest at some 25 to 30 m.p.h. Tornadoes are not depressions ; on the contrary their passage is marked by a slight rise in pressure. Often the approach of these frontal storms is heralded by a darkening of the sky and almost continuous flashes of lightning. They are usually preceded by a day or two in which temperature and humidity mount to most oppressive levels, wind speed drops, and a heavy silence prevails as men and animals await relief. If the storm is to pass overhead, the dark sky advances and the cloud base lowers till nothing can be seen of the great cumulo-nimbus which from a flank is so impressive. When this arrives directly overhead there is a sudden squall whose approach across the country from an easterly quarter can be heard like an express train. In the north the squall can be really violent, nearing 60 m.p.h. and sometimes more, often damaging trees and thatched roofs. Further south velocities are fortunately lower, usually about 30 to 40 m.p.h. at Lagos. On the heels of the squall comes the rain, deluges of it, accompanied by magnificent displays of lightning. Falls of an inch in a quarter hour are quite common and a single storm may yield 1½ to 2 inches in less than an hour. Usually the violent rain soon changes to a steady downpour which may last several hours. The temperature falls most refreshingly—often as much as 20°—and even with the thermometer still reading 70° the air may feel quite chilly. The passage of the storm is marked by a return to light south-southwesterly winds, a clearing of the cloud and a rise in temperature.

Rainfall of this type is most frequent at the onset and retreat of the rains, which means spring and autumn in the south, but in the north the tornado seasons may be separated by only a week or so of quiet rain. It has the obvious disadvantages of violence—damage to crops, housing and soil, and serious discomfort to those caught without shelter. A drop in temperature of 20° in the absence of proper protective housing and clothing often leads to pneumonia, the incidence of which rises sharply in the rains and causes a marked increase in mortality rates.

A less obvious disadvantage of tornado rainfall is that the concentration of the rain into short sharp downpours may leave harmful blanks in both time and space. As regards time, this may have the serious consequence of allowing the corn seed which one storm has allowed to germinate to die before another saves the situation, even though the combined rainfall from the two storms would, if spread evenly over the period, have been quite adequate. As regards space, one village having had three nicely-spaced storms may have corn ready for singling out, while a neighbouring village may not yet have been able to plant its seed. Unreliability, in fact, is a very serious aspect of this type of rainfall and frequently leads to shortages and sometimes to famine in the whole of the zone concerned. The Rajputana saying concerning the grass-lands may well apply here: "Expect one lean year in three, one famine year in eight."

Fig. 3 on which is plotted the rainfall for individual days illustrates this point. After total drought for five months, a series of heavy showers occurred in April and May, but those of April being practically confined to three widely-spaced days scarcely wet the ground. Not till the end of May was sufficient rain for plant growth received. Farmers, however, would have sown their seeds hopefully. The year illustrated was a good one, but in late June–early July, a break in the rains occurred which, if prolonged, could easily have been disastrous to young crops. In actual fact the situation was saved by the storm of June 27th, but had this passed a few miles wide of Kaduna, the situation would have been different. Thereafter, throughout the rainy season, heavy downpours alternated with dry days in a manner at once typical of I.T.F. weather and fraught with all the dangers from soil erosion and leaching so characteristic of the tropics.

In 1951 there was no rain in Bauchi in April for the first time since 1926 and irregularities in last season's rains, together with differing prospects for this, led the price of Guinea corn, the staple food crop, to vary in May from £13 per ton in the Benue where the situation was easy to £90 per ton in the north, at Daura. Even within the province of Katsina, millet ranged from £20 a ton at Daudawa to £30 in Daura. The opportunities for unscrupulous playing of the markets are obvious and this socially undesirable practice does in fact occur to a considerable extent.

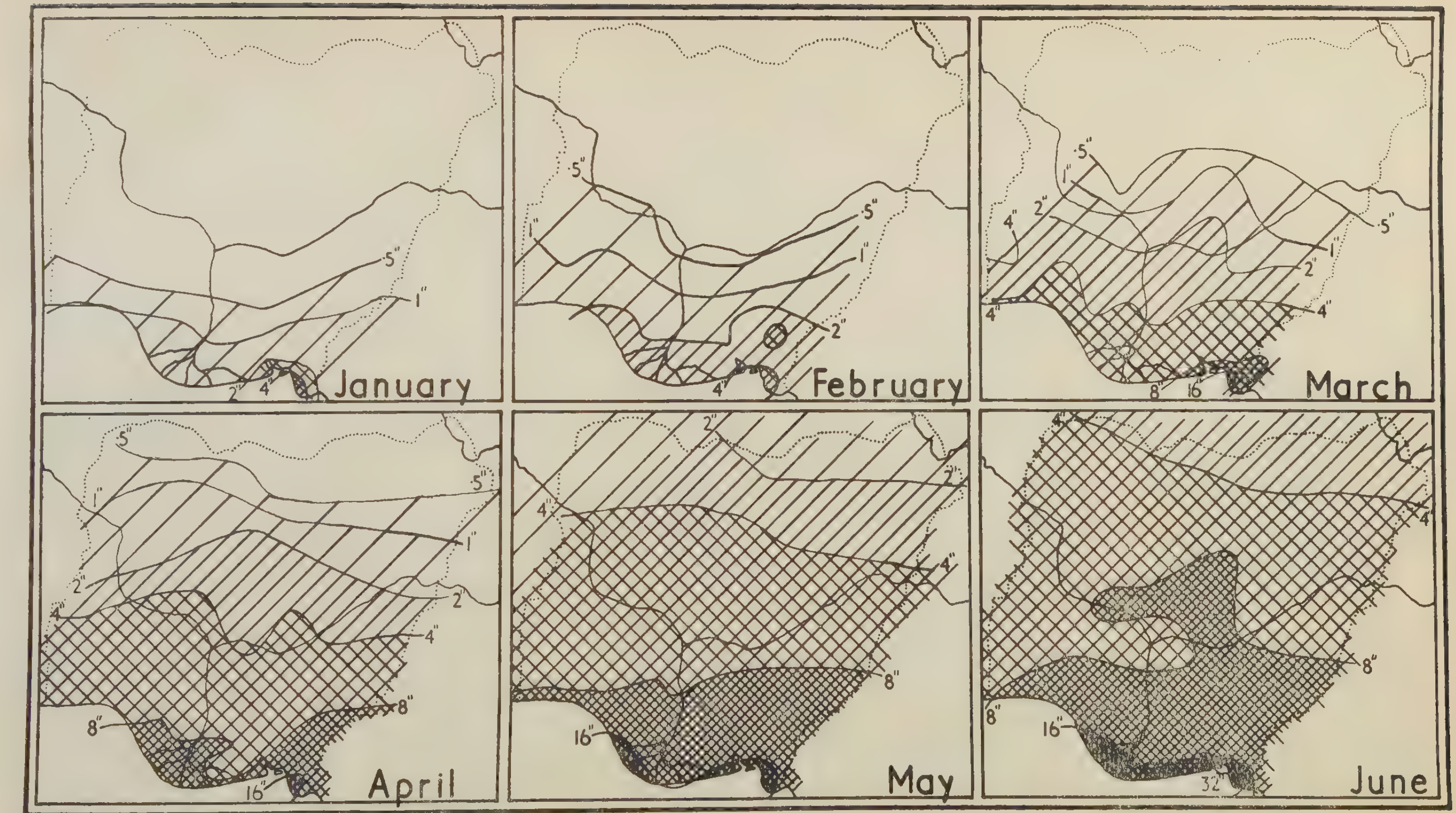
One feature of a tornado not always sufficiently considered is lightning. This may have serious effects, though not usually on housing, for this is never very lofty and contains little or no metal. The most serious inconvenience is to electric power lines which seem to have a strong attraction for lightning. Africa above all continents is rich in water-power, but this tends to be concentrated in large units rather than widespread. Distribution of the power over long distances is therefore inevitable but until devices are perfected to protect transmission lines from lightning much will be lost by interruptions. Telecommunications, both by wire and without, vital to the running of a modern state, are also very vulnerable to lightning strokes.

But lightning has a value which has not yet been fully investigated. A proportion of the hydro-electric power of the world is used to create the high temperatures necessary to fix atmospheric nitrogen in the manufacture of artificial fertilisers. But this is precisely what happens naturally in an electric storm. The French have recognised this for some time and indeed the perennial fertility of the delta lands of southeast Asia has been attributed to it. Work is now being done in India, South Africa and America on the same topic. In some cases, results already show that the nitrates formed by lightning, dissolved in the rain and thus transferred to the ground, may amount to as much as the equivalent of the application of one hundredweight of artificial fertiliser to the acre. This is not much, of course, but year after year its effect must be very worthwhile in off-setting the otherwise continuous leaching of soluble salts. Nitrogenous fertilisers are particularly effective with legumes : groundnuts are legumes ; it may yet transpire that the relative fertility of the northern sands, which to the eye appear as sterile as a sea beach may be due at least partially to the tremendous lightning discharges which characterise this region.

RAINFALL DISTRIBUTION

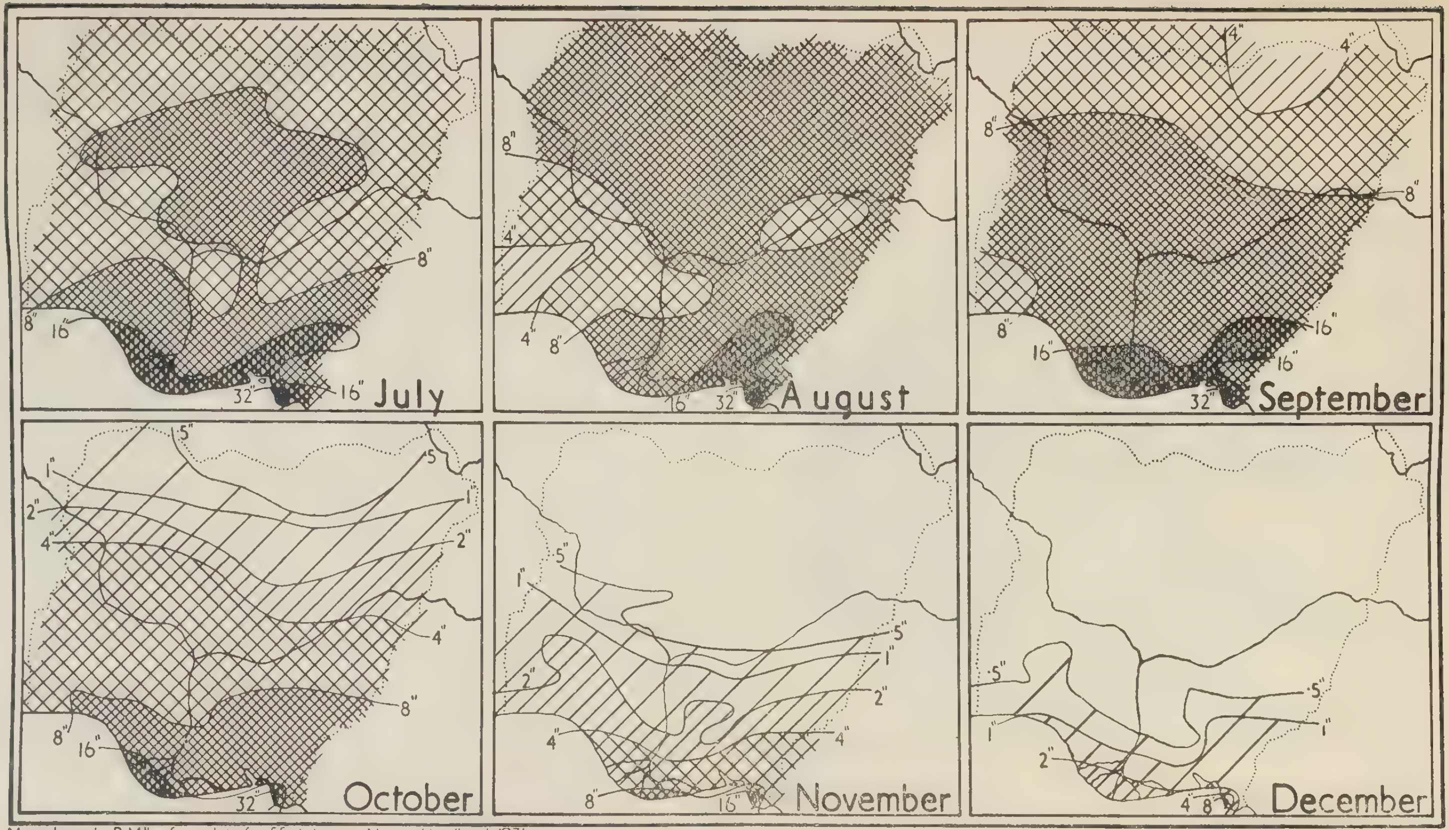
Rainfall is quite the most important element in the climate for on it depends the success or failure of agriculture. Mere total amount, however, is not the prime consideration. Evaporation is so high that what could be an adequate annual total may, if too concentrated in time, be quite insufficient. In other words, we must consider the length of the rainy season as well as the total amount of rainfall. Kontagora and Abeokuta have the same rainfall but dry seasons of five and two months respectively.

Fig. 4 gives a summary of the broad distribution of rainfall over Nigeria. In January, most of the country is dry except for moderate orographical rain on Cameroon mountain and traces along the coast. February shows essentially the same situation except that the zone of light rain now covers the Southern Provinces. By March, however, a new situation appears. The isohyet of 4 inches (100 mm.), which we may take in Nigeria as the threshold for agriculture, now covers a considerable area in the south. The rains have in fact begun. By April, all of the Southern Provinces have entered their rainy season and traces of rain are beginning to appear over the north. May



Maps drawn by R Miller from data for 55 stations in Nigeria Handbook 1936

Fig. 4.—Monthly rainfall in Nigeria, January to June.



Maps drawn by R Miller from data for 55 stations in Nigeria Handbook 1936

Fig. 5.—Monthly rainfall in Nigeria, July to December.

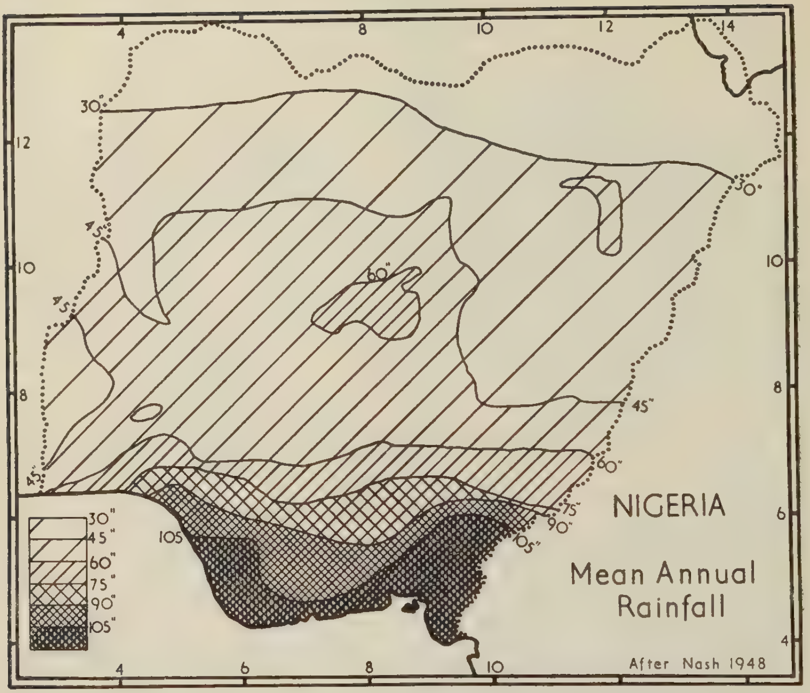


Fig. 6.

brings the growing rains well north and the 8 inch isohyet—representing even for Africa generous rainfall—now covers the eastern part of the Southern Provinces. By June the rainy season has spread to all but the extreme northeast and the generous 8 inch rain has crossed the Benue and Niger. From March to June an orographical effect can be seen in the rainfall on the greater elevation of the Jos plateau and indeed all southern Hausaland.

In July (Fig. 5) no part of the country is without planting rain and the higher parts of the Northern Provinces are enjoying generous rainfall. The 16 inch isohyet, which we may take to represent excessive rainfall now includes much of the southeast. August is a most interesting month. Generous rain now covers the whole country except for the southwest where totals actually drop below 4 inches. Part of the Benue basin receives less than 8 inches. The excessive rain, in the southeast, now occurs in a strip extending northeast and southwest in front of the Cameroon plateau. The monsoon is now at its height ; we may therefore justifiably look for orographical origins for the rain. The shift of the wind at Lagos in August from southwest to west has already been mentioned (Fig. 2) ; if the belt of heavy rain in the south east is orographical, and the pocket of lighter rain in the Benue is in the rain-shadow of the Jos Plateau, then we may suspect that the monsoon has swung not only to a westerly

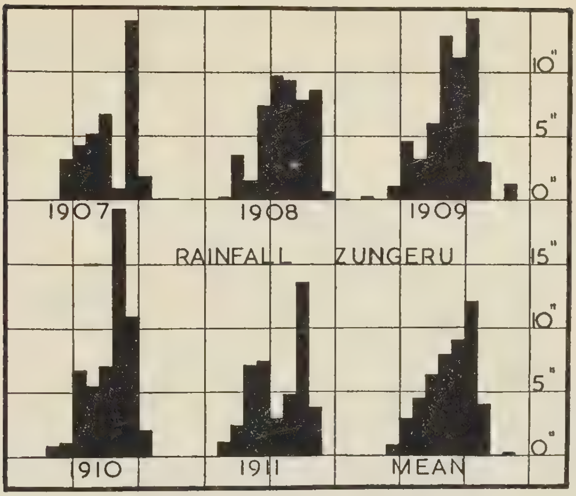


Fig. 7.—Mean monthly rainfall at Zungeru.

direction, but even to the north of west. A careful study of detailed wind observations is required here.

By September, a general recession has begun and this accelerates in October until by November only the extreme southeast is still experiencing a rainy season and December returns us to a situation similar to that of January.

The distribution of annual totals (Fig. 6) is simple. Heavy totals occur in the Delta and the Cameroons, diminish sharply in the latitude of Lagos and thereafter decrease much more slowly northwards. The Jos plateau stands out with over 60 inches (Kafanchan on its southwestern side even records 70 inches) and only the extreme north and northeast receive less than 30 inches. Probably the isohyet of 20 inches, beyond which agriculture must be by irrigation, crosses the boundary of Nigeria in the extreme northeast.

The seasonal distribution, however, is somewhat more complex and it must be borne in mind that data averaged over a period of years may fail to show important variations. For example, Fig. 7 shows a neat graph of mean monthly rainfall with totals rising regularly from March to September and thereafter falling steeply away. The five graphs for individual years, however, all show great irregularity, with two and even three separate maxima, even the major maximum not always occurring in the same month. Research along these lines is obviously necessary to reveal important features that average figures may conceal.

With these limitations in mind, we may refer to Fig. 8 on which a series of regions may be recognised. First, in the north, from Birnin Kebbi to Maiduguri, is a series of stations with a short rainy season and a most pronounced maximum. South of this a second series appears, in which the rainy season is longer but the maximum is no greater than in the first group. Probably other stations in this group

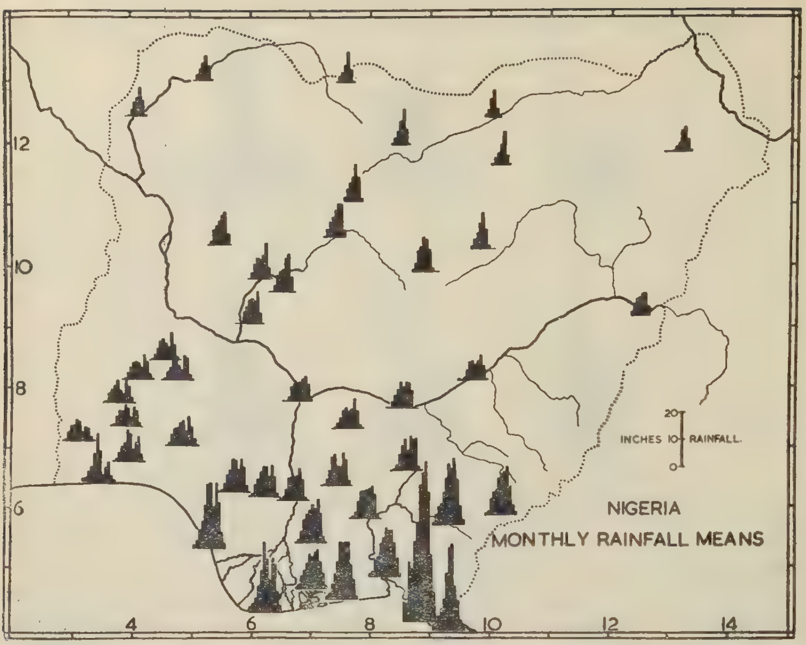
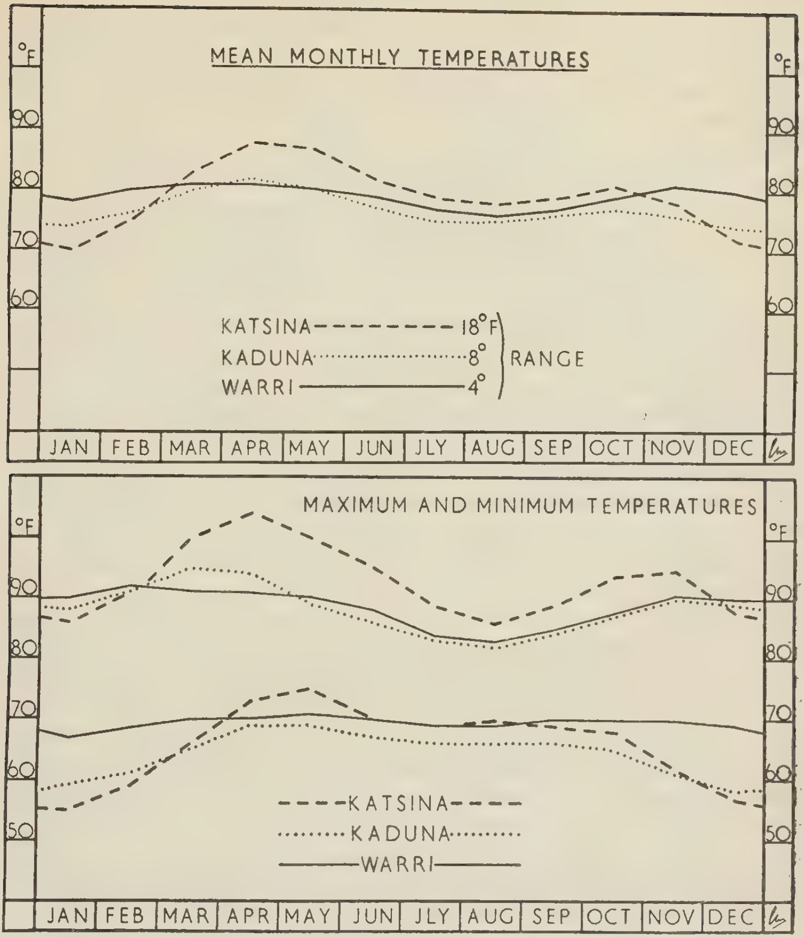


Fig. 8.

would, like Zungeru (Fig. 7) reveal a double rainfall maximum if studied by individual years. These two regions are characterised by corn cultivation, the emphasis being on millet in the first and guinea-corn in the second.

The third group comprises stations in the southwest distinguished by the presence of a well-marked little dry season in August, no months of drought and no months of excessive rainfall. The fourth group might be regarded as a deterioration of the third. It lies immediately west of the lower Niger and differs from group three mainly in having a wetter rainy season. East of the Niger a fifth group is characterised by high totals, no, or almost no, little dry season (though individual years would probably show one), and a main dry season that yet has never less than 1 inch of rain in its driest month. These characteristics are no doubt due to a large orographical element in the rainfall, an element which reaches its fullest development in the extreme southeast on the slopes of the Cameroon plateau, where a sixth group is marked by very high annual falls, no real dry season and an excessive rainfall at the height of the rains. While all of the south is characterised by the yam, which requires almost a twelve-month growing season, the southwest is marked off by cocoa cultivation and the rest by the oil palm. The coco yam, with a tolerance for much moisture and shade characterises the southeast. A series of stations on the Benue, from Lokoja to Yola, is left to form a seventh family. This is characterised by a distinct winter dry season, an abrupt rise in precipitation in the



Figs. 9 and 10.

spring, no excessive maxima (though here again year-by-year analysis would probably reveal a tendency for variation in the date of maximum rainfall) and an abrupt drop in the autumn. These conditions, however, suit no particular crop and this Middle Belt is therefore an unfortunate one whose agricultural poverty is reflected in its sparse population.

Temperatures

So far, only casual references have been made to temperature because of course the overwhelmingly important factor in the climate of Nigeria is rainfall. Rainfall determines the vegetative growth and rest periods without any reference to temperature. Only at the highest elevations—on Cameroon mountain, Cameroon plateau and the Jos plateau does the temperature factor enter and only in the case of Cameroon Peak does it predominate. “ Natural ” vegetation on the Jos and Cameroon plateaus takes the form of grass and as tsetse are absent these two areas are the best in Nigeria for cattle. On the Jos plateau the native food-crop is acha (*Digitaria exilis*), a grass-like plant with minute seeds making an excellent porridge. Its requirements of temperature and moisture are not well known and it is possible that other than temperature factors are involved.

It is all too possible, however, to overlook the importance of temperature in the geography of Nigeria in stressing the predominance of rainfall. This becomes at once apparent when we investigate the seasons. If rainfall alone mattered there would be only two seasons, except in the southwest. Native peoples, however, recognise more than these and the additions are due to temperature. Temperature scarcely affects man's crops, but it can have, within the limits found in Nigeria, profound effects on his own body, on his health, comfort and efficiency as a producer.[1]

Two main elements determine temperature. The predominant one is the altitude of the sun and this depends, of course, on the month. The second is the transparency of the atmosphere—roughly the inverse of cloud cover, which is in the main a function of rainfall and humidity.

Range of temperature thus increases from south to north. Fig. 9 shows three characteristic stations, on the delta, in about latitude 10° and on the northern frontier respectively. Warri has the extremely low annual range of 4° F. owing to its nearness to the sea and cloud cover ; Katsina ranges from 70° to nearly 90° ; Kaduna is intermediate and, owing to its elevation, cooler than it would otherwise be for its latitude. Katsina also benefits from altitude. All three stations show twin maxima, the depression of temperature in July–August being due to heavy cloud cover and evaporation from the wet ground in these months. Mean monthly temperatures, however, conceal a good deal that is of importance to man and Fig. 10 showing maximum and minimum temperatures, roughly day and night conditions, are more revealing. Warri, with its low mean annual range above and below 80° is shown to have a daily range of 20°, oscillating between the great heat (for high humidities) of 90° by day and 70° (relative comfort) at night. Under these conditions, housing and clothing can do little to relieve discomfort by day ; since the latter is due largely to humidity only air conditioning apparatus can produce any alleviation. By night, however, simple fall of air temperature alone can afford relief and therefore housing is best designed to admit as much air as possible. Slatted bamboo walls are the obvious and common solution where considerations of security do not make a solid wall preferable.

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[1] The following extract from a letter recently received by Mr. J. Fairgrieve illustrates Dr. Miller's point.—Ed.

"African Girls' High School, Lagos, July, 1952. . . . They all feel the cold just now for it is getting on in the rainy season, which is the cool season here, and the temperature even in the day time is sometimes down to 75° F. We begin to feel more energetic then, but the girls become rather listless, and their energy begins to return when the temperature goes back to about 85°."

Katsina ranges from over 100° by day in April to 55° in January by night. This very great range introduces considerable discomfort and it is not surprising that both housing and clothing show a response. Protection from heat involves warding off the sun's rays and this is done by loose overall clothing, with headgear, and by thickwalled buildings. In the extreme north, the low rainfall also allows thick flat roofs. These thick-walled houses have windows and doors reduced to a minimum and both are fitted with coverings. By day, the house is kept shut up and in the evening opened wide, the object being not merely to avoid allowing either the heat to penetrate or the hot air to enter, but to trap some of the cooler night air and so afford relief by day. Even so, man suffers a great reduction of his powers of work where temperatures go thus high. The human frame has great powers of endurance to heat, but when air temperatures surpass that normal for the body (98·4°) as they frequently do in the north of Nigeria, the heat-regulating mechanism suffers a heavy strain and in fact there are generally a few weeks in this area when human activity during the hot season dwindles to the bare essential.

By contrast, in these very regions, December and January nights, with relative humidities as low as 30 per cent., produce a physiological cold that is quite severe, the wet bulb temperatures sometimes falling below 40° F. Fortunately the same thick-walled buildings and overall clothing are a suitable response when supplemented by fires at night and extra clothing and blankets. In the absence of these—and poor people often lack them—the numbing cold reduces activity quite as much as the overpowering heat.

It must be admitted then, that while temperatures do not much affect agriculture, they do influence man and except for short periods influence him in a harmful manner. Apart altogether from the many diseases which are encouraged by high temperature it seems very probable that exposure to trying conditions of temperature, aggravated sometimes by excessively high or low humidities, lays a heavy strain on man and reduces his output of useful work. We await, however, further results from the research now being prosecuted into high temperature physiology.

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A CENTURY OF CHANGE ON THE COAST OF CORNWALL

SEABORNE TRADE, FISHING AND THE TOURIST INDUSTRY IN THE MID-19TH AND 20TH CENTURIES

W. J. BENNETT*

THE coasts of Cornwall are, for the most part, cliff-lined with trends dependent largely on geology, but, since the north coast is generally more exposed and wave attack is stronger from the Atlantic, there are considerable contrasts between north and south. The north coast is one of precipitous and often high cliffs, numerous stacks, long sandy beaches and considerable areas of blown sand. The south coast is more indented ; there are more drowned-valley estuaries, more natural harbours and numberless creeks ; the cliffs are generally rounded and the grassy slope more frequently replaces the bare rock face. Raised beaches are better preserved on the south coast, though there are considerable remnants in the more sheltered stretches of the north.

Climatically, also, there are contrasts between the two coasts. Stations on the north coast show, at all times of the year, temperatures which are cooler on the average by 2° F. than stations on the south coast. Because of the high relative humidity experienced in the peninsula (86 per cent. in the morning at Falmouth) and because the south coast tends to be more sheltered than the north, the former is more " relaxing " to the human body.

The physical features of the coast in general and the contrast between the north and south coasts in particular have been of considerably different human significance at the two periods considered here.

In the mid-19th century, metalliferous mining and, to a lesser extent, fishing production were approaching their zenith in Cornwall. Agriculture was more productive than ever before ; stone and slate quarrying and china clay extraction were growing steadily. Reflecting this economic peak population had almost reached its maximum prior to the great emigrations of the late 19th century. To industry and population alike, seaborne traffic was of supreme importance, for, at this time, the railway system of the county consisted of little more than a number of separate mineral lines (from ports to mining and quarrying areas) which were unconnected with the main English network. The roads were still poor and road transport expensive. Even the smallest creek and the poorest harbour were of significance ; so great, in fact, were the needs of the mining industry that it was found economic to build and use harbours in physically unsuitable situations if such situations meant a shorter land journey for the materials handled.

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* Mr. Bennett is an assistant master at Gosport County Grammar School teaching geography. The subject of this article is related to that of his prize-winning essay submitted to the Royal Cornwall Polytechnic Society in 1949, during his post-graduate research at the University of Nottingham.

The relative diversity of trade of most of the Cornish shipping points at this time is indicated by the accompanying map (Fig. 1) and table.

It is possible to divide the shipping points into four broadly defined groups ; firstly, the major port, handling both a considerable diversity and a considerable quantity of traffic ; next, the more exclusively mineral port ; thirdly, the smaller port ; and last, the miscellaneous wharves.

Of the major ports, Falmouth handled the greatest diversity of traffic and almost certainly the largest volume, possessing, as it does, together with Penryn, by far the best natural harbour of the county and a position close to the highly-mineralised and densely-populated west of Cornwall. In common with the other major ports, Penzance,[1] St. Ives, Penryn, Fowey and Looe, it was concerned, not only with coastal traffic, but also with foreign trade ; and, again, in common with the others, it handled considerable amounts of the products and needs of both the extractive and the fishing industries. Important were the reciprocal copper ore and coal trade with South Wales, the export of pilchards to Italy and the import of salt from France, and staves and other timber from Scandinavia and North America. All these ports had harbours possessing considerable natural advantages though they had been and still were being improved or artificially extended.

The more exclusive mineral ports were Hayle, Portreath, Perranarworthal Creek, Gweek, Pentewan, Charlestown and Par. Most of these were concerned with the reciprocal copper ore and coal traffic, some with silver-lead and other ores and the last three with the export of china clay in addition. Little else was handled except, possibly, mining equipment (including timber) and groceries. Hayle and Portreath, in particular, handled huge quantities of ore and fuel. In the 1830s 100,000 tons of copper ore were being exported annually to Swansea from Portreath and an even greater tonnage of coal was being imported.

Most of the harbours of these mineral ports had been either created or much improved following the great increase of mining and quarrying in the late 18th and early 19th centuries. The mule, which was the main means of transporting materials at this time, was expensive[2] and harbours, including basins of considerable size, had been built near the mining areas in face of apparently insuperable physical difficulties. Portreath Harbour, for example, was built at the north end of a small sand-choked bay in a formidable cliff-lined coast unprotected from the westerly gales. Porthleven, near Helston mines, was being improved in the mid-19th century as a mineral port, but it never

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[1] The quay tolls of Penzance in 1851, amounted to £3,128. *Parochial History of Cornwall.* 1867–72, ed. Lake.

[2] Dr. F. A. Turk (Reskadinnick) suggests that the mules were imported from Poitou in France, possibly via Hayle.

TABLE I
ITEMS OF TRADE OF CORNISH PORTS IN THE MID-19TH CENTURY

	EXPORTS													IMPORTS																
	Fish				Metallic Ores and Metals				Stones and Clays			Other Exports		Fuels and Fertilisers				Materials for Extractive Industries and Fishing					Food					Other Imports			
	Pilchards	Pilchard Oil	Other Fish	Oysters	Copper Ore	Other Ores	Black Tin and Tin	Arsenic	Slate	Granite	China Clay and Stone	Timber and Bark	Textiles	Lime	Limestone	Sea-sand	Coal and Culm	Timber	Iron	Hemp and Tallow	Machinery	Salt	Grain	Flour	Malt	Sugar	Provisions	Hides, Tanning Materials and Leather	Wool and Cotton	Wines and Spirits	Luxuries
Falmouth	/	/			/		/						/				/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Penzance	/	/	/		/		/			/	/						/	/		/			/	/			/	/	/	/	/
Penryn								/		/							/	/	/				/	/							/
St. Ives	/		/		/		/		/								/	/	/	/		/					/			/	
Looe	/		/		/	/				/		/			/		/					/									
Fowey	/		/												/		/	/		/		/									
Hayle			/		/										/		/	/	/												
Portreath					/					/							/	/	/								/				
Perranarworthal Creek						/	/	/		/				/			/	/	/				/	/							
Par					/	/				/	/						/										/				
Charlestown	/				/						/						/	/													
Pentewan											/																				
Gweek*	/			/	/					/				/			/	/													
Porthleven						/					/				/		/	/	/												
Newquay	/										/						/														
Truro						/	/						/				/	/	/	/			/				/				/
Padstow	/	/					/										/	/	/								/				
Wadebridge						/				/	/			/			/	/	/												
Mevagissey	/	/															/	/		/		/					/				
Trevaunance					/				/						/		/														
Marazion					/	/											/	/	/												
Bude												/			/		/										/				
Polperro	/		/											/			/														
Boscastle									/					/			/										/				
Ports Isaac, Gaverne	/								/								/														
Gorran Haven																	/														
Tintagel									/								/														
Port Quin																	/														
Porth																	/														
Gannel and Trevemper						/								/			/														
Gear				/										/			/										/				
Helford				/													/										/				
Tresillian														/		/	/														
Ruan Lanihorne																/	/														
Sladesbridge														/		/	/														
Calstock					/	/				/				/			/														
Hilton																	/														

* Gweek, unlike the other mineral ports, was without a railway linking it to mineral areas and it suffered in consequence.

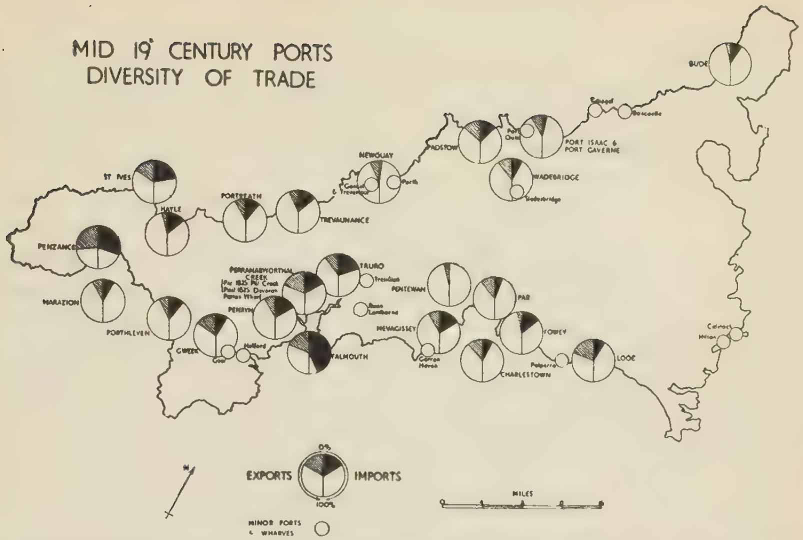

Fig. 1.—This map is derived from the data given in the table showing the items exported and imported by the various ports. The information was collected mainly from a number of County 'Histories,' town 'Guides' and Post Office Directories of the period.

The map gives a 'co-efficient of diversity' for both the imports and exports of most of the ports. If the port exported (or imported) *all* the items indicated at the head of the table, then the value of the co-efficient is 100% ; if only half these items are dealt with, then the value is 50% and so on.

Figures showing monetary values or tonnages of trade handled by Cornish ports at this time are not available, but, broadly speaking, the ports with the greatest diversity of trade were also those with the greatest value and weight of trade. The exceptions were the specialist mineral ports which handled huge quantities of fuel and ore, but little besides.

assumed the importance of the others and was financially a failure.

The "smaller port" group consists of ports which cannot be classed with the first two categories. It includes, predominantly, fishing ports with relatively little trade, such as Mevagissey, Newquay, Padstow and Polperro ; Truro, with some diversity of trade, though small in amount ; and little ports with a very limited hinterland and a small trade in slate, fertilisers and groceries such as Boscastle, Porth and Trevaunance (St. Agnes).

Finally, there were the wharves of river and estuary together with the wharves on the few canals (e.g., the Bude and Looe Canals).

These were situated at points as far inland as possible in order that the maximum amount of farmland should be served with the lime, sea sand and other fertilisers which, with fuel, were their chief concern. Such were the wharves at Tresillian, Sladesbridge and Trevemper, but they were so numerous that only a few are shown on the map.

Wooden-hulled sailing ships were built for the coastal traffic at many Cornish ports. Even at the relatively small port of Newquay, for example, there were four yards which between them built 12 schooners and ketches in the period between 1841 and 1858[3], in addition to repair work. From time to time, ocean-going vessels were built at the larger ports of Falmouth and Penzance.

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[3] W. H. Verran. *The Mariner's Mirror*, vol. 31, 1945, p. 198.

With regard to fishing, three main methods were in use in the mid-19th century, the seine net, the drift net and the hook and line. Other methods were relatively unimportant.

Although the irregularity of appearance of the pilchard shoals[4] both from point to point and from year to year made it a precarious venture, seine fishing was still on the increase in the county as a whole. The seine was an inshore fishery and particular coastal conditions were necessary for its operation. The ideal situation was a shallow bay (so that the pilchards could not escape under the net), floored by a smooth, rock-free beach (to prevent damage to the net), sheltered (important, particularly when the pilchard came in the later and stormier months of the year) and without strong tides and other coastal currents to make the operation difficult. Although the north coast had many beaches, the south coast more usually fulfilled these conditions. Attempts to start seining were often made at points on the north coast only to be abandoned after a few years. Moreover, the south coast had an additional advantage in that the pilchard is a warm water fish which is here at the northerly limit of migration on a large scale. It is important to remember when examining the map (Fig. 2) that the number of seine nets per station is not a completely reliable indication of their relative importance. This was particularly the case at St. Ives, the dominance of which is over-emphased by the map, for a local Act of Parliament had ordained that the right of a seining company to fish a certain stretch of beach depended on the number of nets it possessed. But false impressions can be corrected by reference to the number of men afloat in the seine fishing in 1877. While St. Ives was still the leading seine station, its fishery employed only one-fifth of the county total of men afloat. Newquay was the second most important and St. Mawes (three miles east of Falmouth) the third.[5]

The drift net fishery was also expanding, though the number of pilchards caught by this method was not yet so great as by the seine method.[6] Drifters had an advantage over the seine boats in pilchard fishing in that they were able to intercept the pilchard instead of waiting on the shore ; but, although the boats were increasing in size, they were still subject, in the days of sail, to the vagaries of the weather and their range was limited. This meant that there were nearly as many drift net stations as there were seine net stations.

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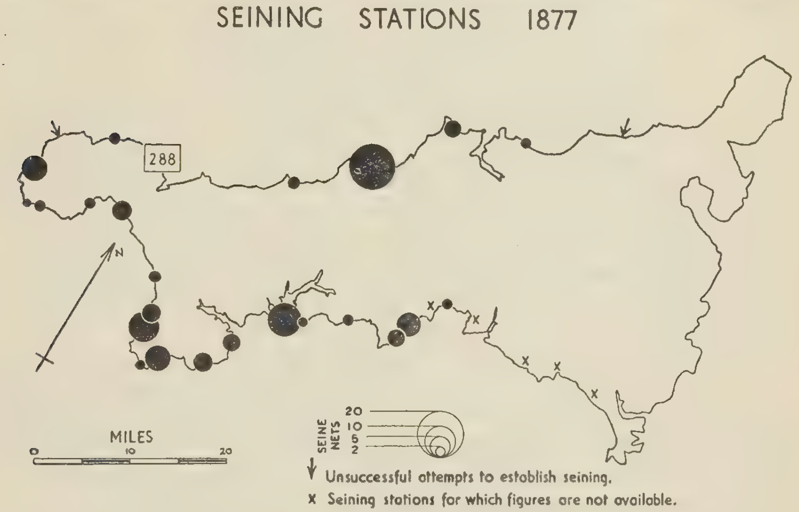
[4] The pilchard was the only fish which habitually entered shallow water in large numbers. It was only rarely, therefore, that other kinds of fish were caught by the seine method (e.g., mackerel).

[5] All figures : H. Fox. *Annual Report of the Royal Cornwall Polytechnic Society*. 1878.

[6] In 1833, 2,570 men were employed afloat in the seine fishing together with as many others on shore in the curing cellars, etc. By comparison, there were only 1,100 men afloat in the drift fishery with very few others employed outside the fishermen's families. The numbers in drift fishing had considerably increased by the 1870s, however. Quoted by H. Fox. *Annual Report of the Royal Cornwall Polytechnic Society*. 1878.

The pilchard was by far the most important, but not the only fish caught by Cornish fishermen at this time. The hook and line fishery had grown, particularly in the two decades before 1850, when Cornish boats had begin to visit grounds in other parts of the British Isles (e.g., Isle of Man) for the herring fishing. Outside markets were growing and the herring caught in these yearly trips were sold in nearby English markets. In addition, fish caught in Cornish waters (particularly early mackerel, but also cured ling, whiting, etc.) were being despatched by fast sailing smacks and by regular steamers to Bristol, Portsmouth and London. There was, as yet, no movement towards centralisation of the fishing industry in Cornwall, though the fishing stations of the far west (Mount's Bay and St. Ives) were dominant in all branches of fishing. This was due to the advantages of their situation in relation to the migration of the pilchard, mackerel and herring as much as to the enterprise of their fishermen.



↓ Unsuccessful attempts to establish seining.
x Seining stations for which figures are not available.

Fig. 2.

Although, as elsewhere, it was the railways that brought the modern tourist industry to Cornwall, already by the mid-19th century an early form of this traffic had developed. There were two main groups of visitors to the coast: the invalids who were attracted by the mildness of the Cornish winter and who came from considerable distances and the wealthy families from within the county who visited the beaches for the summer bathing which had become fashionable in the late 18th century.

The winter invalid traffic had developed during the Napoleonic Wars when the fashionable continental health resorts were for a time cut off. Penzance, where the equability of the Cornish climate is most marked, was both the first and most important of the winter health resorts. By the mid-19th century, not only were detached houses available for the wealthy for short periods but there were lodgings in at least half a dozen of the streets of the town. The village of Marazion, which is situated on Mount's Bay a few miles to the east of Penzance and shares similar climatic advantages, was also popular with invalids. The stretch of level raised beach on which runs the main road between Marazion and Penzance offered an easy walk, exceptional in an area of steep slopes.

Summer bathing resorts included Bude, Newquay, Perranporth, Porthleven and Polkerris near Fowey ; the first three being situated on the most extensive stretches of sandy beach on the north coast. At Bude, Sir Roger Acland had built special houses earlier in the century for the reception of visitors and cottages were also available for the summer season. Wealthy families were building summer residences and spending the summer season at both Newquay and Porthleven. " Furnished lodgings " were much in demand at Newquay and, at Perranporth, in addition to the cottages where the " gentry " could " take up temporary abode," there was also a farmhouse which took visitors.[7]

By the mid-20th century, the seaborne trade handled at Cornish shipping points has been reduced to only a fraction of the mid-19th century level, though for heavy goods of low value per weight-unit, it is not entirely negligible and may be said to parallel the trade of English canals (as indeed it did in the mid-19th century).

With the exception of the two china clay ports, most Cornish ports have survived into the 20th century only to handle small quantities of bulk material such as artificial fertilisers, coal and timber. Even in these cases, the competition from road and rail transport has made trading increasingly uneconomic. The recent war seems to have reduced trade even further—the traffic having been discontinued and never re-started.

Of the long-established ports which, in the 19th century carried on a trade of considerable diversity with foreign countries as well as having coastal connections, Falmouth and Penzance are of much diminished importance. Falmouth is still significant as a ship-repairing centre but little, if any, trade is carried on. Penryn, nearby, still handles granite from the Longdown quarries but nothing else. Small quantities of china clay were shipped from Penzance, Falmouth and Padstow before 1939, but none has been shipped since. Truro still carries on a coastal trade in coal, motor spirit, gas, oil and cement, with some timber from the Baltic. It is entirely an import trade and the total annual tonnage amounts at present to about 33,000 tons. Before 1939, the annual tonnage amounted to 80,000 tons and imports also included feeding stuffs from the continent, grain, flour, and manure ; in addition, hides and china clay products were exported. Looe handles only coal and cement to-day (coal about 2,000 tons per annum, cement 400 tons) and this has been the only traffic, with the exception of fishing, since the late 19th century, when the export of copper ore, granite and china clay ceased.

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[7] W. J. Bennett. " The Origins and Development of the Tourist Industry in Cornwall." *Annual Report of R.C.P.S.* 1949.

Most of the ports created specifically for the mining industry have declined in the same way as the ports with more diverse trade. Gweek and Devoran are completely derelict. Hayle survives to import artificial fertilisers and coal. Portreath handles only coal for domestic use and the factories of the Camborne–Redruth area, and even this traffic has been restricted by rationing. Meanwhile, of the china clay ports, Pentewan is to-day of negligible importance. Par and Charlestown export variable amounts of clay and Fowey, which became a china clay port in the late 19th century, has become the most active. Par imports coal, cement, felspar and asphalt (in recent years a total of about 47,000 tons annually) and exports china clay, china stone and sand (in pre-war years 50,000 to 120,000 tons). But, although it has an advantage over Fowey in that it has access by road as well as rail, Fowey handles by far the largest export trade (annual shipments of clay in pre-war years being 400,000 to 600,000 tons). On the other hand, the import trade of Fowey (about 1,000 tons of coal for domestic use) is negligible.

Few of the smaller harbours are used for trading purposes of any kind. The first World War interrupted and effectively extinguished the already much reduced traffic carried by the old wooden-hulled vessels. After 1919 the small steel-hulled steamers visited only the harbours with non-tidal basins or with deep-water approaches. Newquay Harbour increased in importance in the late 19th century, only to decline and was finally handed over to the town by the G.W.R. in 1928 to serve the pleasure boats and a few small fishing vessels. Bude Harbour, together with the Bude Canal property, was bought by the Urban District Council in 1901. The Harbour, never of great importance because of its narrow channel and inadequate protective works, has been operated largely in conjunction with the canal. Following the disuse of the latter when the railway reached Bude in 1898, the trade in coal, slate, lime and sea sand failed altogether.[8]

Small ports such as Boscastle, Port Isaac, Port Gavern and Trevaunance no longer carry on any trade, but some of the river and estuary wharves are still used, as for example, Tresillian which handles small quantities of roadstone. With the decline of coastal traffic, no ships are now built in Cornwall. Falmouth, with its westerly position, is an important repairing centre, but only a small amount of simple work is done elsewhere (e.g., Fowey).

In the late 19th century, the railways opened larger home markets to Cornish fish, but after a brief period of prosperity, the industry fell into a decline. This was partly the result of a national trend towards centralisation, but it is generally agreed that it was also the lack of enterprise on the part of the fishermen.[9] The fishing industry that remains in the mid-20th century has become concentrated largely in three ports. The occupation tables of the 1931 census show that 61 per cent. of the 2,391 fishermen living in Cornwall were in Newlyn, St. Ives and Porthleven.

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[8] The railway was extended to Launceston, then to Holsworthy and finally to Bude, thus slowly capturing the area served by the port.

[9] For an account of the decline of the fishing industry in the South-West see *A Preliminary Survey of Devon and Cornwall.* Exeter, 1947.

The reasons for this localisation are as follows. Firstly, the rail-head port has an obvious advantage and it was natural for wholesale fish merchants (particularly important in Cornwall where the tradition has grown up that a boat always sells its catch to the same merchant) as well as storage, net-repairing and other facilities to become concentrated there. Secondly, the size of fishing vessels was rapidly increasing in the late 19th century and when large steamboats from Lowestoft and Yarmouth began to visit the Cornish waters for the herring season, the better harbours were in demand. It was Newlyn, the most important fishing centre to-day, that then led the way with harbour improvements.

Lastly, there was the irregularity of the appearance of the pilchard in the bays which had encouraged the rise of drift net fishing as opposed to seine fishing. The catch of pilchards by drift net exceeded the catch by seine net in the 1870s. By the early 1920s, following a decade or more of unsuccessful seasons, which were the prelude to the virtual cessation of the pilchard's visits, and the decline of the all-important Italian demand for the cured pilchards, most of the seine nets had been sold. Since the motorised drift boats (nearly all were motorised by 1922) have a range of from 20 to 25 miles and can bring back fish rapidly and in good condition, numerous fishing stations are no longer necessary.

The tourist industry has become the staple industry of the coast in the 20th century. Different physical features have become important as a result.

Firstly, the mild winter climate which was so important in the early days of the tourist industry has to-day relatively little significance. The growth in popularity of the summer holiday and the possibility of rapid transport that came with the railways has meant that the summer season is much more important. A third of the total Automobile Association recommended accommodation, for example, is closed between the months of October and March[10]. This dominance of the summer season is most marked on the north coast, with its less attractive winter climate. At Newquay nearly 50 per cent. of the total available A.A. recommended accommodation is closed during the winter months and it is estimated that two-thirds of the total annual intake of visitors (about 180,000[11]) come to the town in the months of July and August. Meanwhile, on the more climatically favoured south coast, only a very few of the A.A. recommended hotels close during the winter.

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[10] The figures for A.A. accommodation used in the text and the accompanying map have been calculated with " number of rooms " as the unit. The accommodation includes all that is recommended by the A.A. (both appointed and approved) and which is set out in the Annual Handbook 1939/40 (the Hotel List for 1950 is identical). This, of course, does not, by any means, include all available accommodation, nor can the map be said to give more than a rough guide to the relative importance of the resorts of the County.

[11] Average annual figures for the period 1946/9. Newquay Publicity Officer.

Beaches are obviously more important to-day. On the north coast between the county boundary and Pentire Head (approx. 37 miles), the one sand beach of more than ¾ mile in length (Bude Strand 3¼ miles long at low mean water) which is also the one easily accessible beach (without steep gradients via the Strat valley) coincides with the one major holiday resort, Bude. There are over 6 miles of sand beach at or to the east of Newquay, the resort which shows by far the largest amount of A.A. recommended accommodation available in summer (see Fig. 3). It is notable that the same shore conditions that were suitable for seine fishing, a sheltered bay without strong current or tides and floored by a sandy, rock-free beach, are also ideal for bathing. Hence the fact that a large number of resorts were formerly seining stations, e.g., Newquay, St. Ives (and Carbis Bay), Port Gavern and Polkerris.

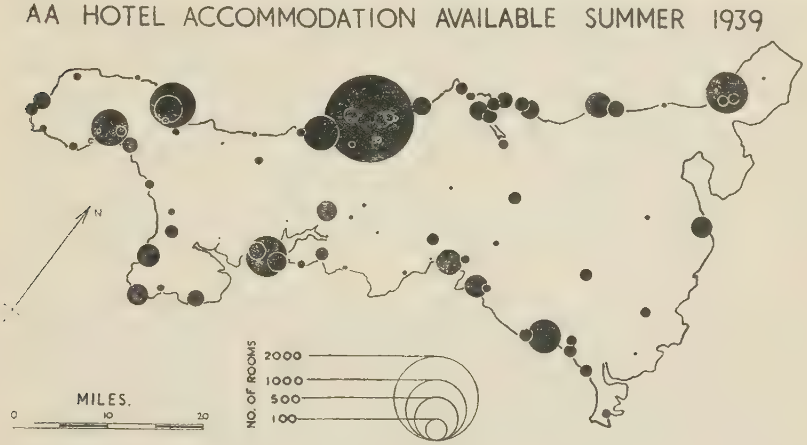

Fig. 3

The extensive areas of blown sand on the north coast have also proved valuable amenities to the tourist industry. Often, where the sand is sufficiently consolidated, the areas have provided cheap building land and even, in the cases of the Fistral Dunes (Newquay) and the Towans (Hayle), where some of the sand is naturally cemented, building stone. Where the sand is looser, light structures ranging from shacks and converted railway carriages to more orthodox bungalows have been erected, as at Constantine Bay and the Towans. At Bude, Rock and Newquay, the blown sand areas unoccupied by buildings were easily transformed for use as golf courses, tennis courts, etc. At Penzance, the foundation of the Western Promenade consists of "sandhills covered at intervals with a short green turf."

Raised beaches, with or without "head," have provided valuable stretches of relatively level land for seaside building on a largely cliff-lined coast. There are single houses at Pendower (raised beach with " head "), a small group of beachside restaurants and shops at Polzeath and even a fairly extensive estate at Widemouth. At Portreath, a raised beach, artificially consolidated by concrete, forms the Promenade.

Finally, there has been an increased interest in the æsthetic attractions of the coast. County historians and guide books of the early 19th century emphasised the places of interest, such as Land's End and the Logan Stone, and the climatic benefits rather than scenic attractions. Cornwall seems to have been " discovered " for the rest of England in 1850, when Wilkie Collins wrote his *Rambles beyond Railways*. He was followed by a series of romantically minded literary visitors ranging from Mrs. Craik who wrote *An Unsentimental Journey through Cornwall* in 1884 to Thomas Hardy whose *Pair of Blue Eyes* appeared in 1895. The latter helped to popularise the attractive Boscastle–Tintagel coast, the beaches of which are very small. Shortly after its appearance, houses " for the convenience of visitors " were built in Boscastle and extra omnibus services were being run, in summer, to Camelford Station on the then recently-completed railway from Launceston.

These changes in geographical values on the Cornish coast over the last century have naturally changed the settlements situated there, and we may now recognise three contrasted classes. Firstly, there are the old ports and fishing centres which have developed an important tourist interest. These range from Penzance and Falmouth, where the interest in visitors dates from the early 19th century, to the smaller fishing and trading points whose attractions seem to have been discovered in the eighties and nineties. Here also we may include the three main fishing centres, the china clay ports and such other ports which still handle a small amount of seaborne traffic. Secondly, there are the new holiday towns each with an old nucleus which to-day has been reduced to insignificance (Newquay, Bude, Perranporth). And, finally, there are the smaller groups of modern buildings with varying functions related to the tourist industry, most of which are beach side satellites of older centres. The most spectacular increase in settlement of this type has been since 1920 with the popularisation of the motor car.

BIBLIOGRAPHY.

County Histories—
    Magna Britannia, vol. III, Lysons, London, 1814.
    History of Cornwall, Hitchens and Drew, Helston, 1824.
    History of Cornwall, W. Penaluna, Helston, 1838.
    Parochial History of Cornwall, Davies and Gilbert, London, 1838.
    Parochial History of Cornwall, Ed. W. Lake, Truro, 1867–72.
Guide to Penzance, J. S. Courtney, Penzance, 1845.
Half a Century of Penzance, 1825 *to* 1875, L. Courtney, Penzance, 1878.
Bude Haven, J. E. Acland, 1914.
Old Newquay, S. Teague-Husband, Newquay, 1923.
Kelly's *Post Office Directories* for 1856 and 1901.
Meteorological Office. Averages of British Temperatures and Humidity.
Population increases with growth of tourism. Census Reports 1891 to 1931.
Harbour Authorities of the Ports of Penzance, Fowey, Truro and Looe.
Harbour Companies of the Ports of Hayle, Portreath and Par.

THE PRESTON—LARNE FERRY

E. Cook*

IN most parts of the world docks and harbours are very closely linked with railway systems, and those of our own ports are normally no exception. However, during the war, with the invasion of the European mainland in view, methods of loading and unloading ships were evolved in which no quays or railways were required. Large floating ferries of novel character were designed, into and from which, fully laden vehicles could be driven under their own power. The method had obvious advantages and the possibility of its adaptation for civilian transport and industry was noted, and at the end of the war the Continental Line of London planned to operate a similar system commercially.

At first, in order to meet special demands on the Continent a temporary service was opened between Tilbury and Hamburg[1] *via* Antwerp. Then in the autumn of 1948 a regular bi-weekly service was opened between Preston, an ideal focal point for road transport in industrial Britain, and Larne in Northern Ireland. Further routes between Tilbury-Rotterdam and Tilbury-Antwerp are now being developed.

By using specially built ships, large ocean-going Tank Landing Craft of some 4,000 tons, it is possible for all types of vehicles and mobile equipment to be loaded and off-loaded on their own wheels with the minimum of delay. As each vehicle reaches the docks in Preston it is driven with its load direct from the quayside by way of a ramp (part of the famous Mulberry Harbour) into the large hold of the ship. There is little waiting, no crating, packing or slinging, no handling from lorry to quay and from quay to hold. At the disembarkation port the lorry is driven off again ready for the road. The advantages in speed and economy are obvious. Vehicles can be driven direct from factory or warehouse to final place of distribution, and dockside delays are reduced to a minimum. Freight costs have been simplified too. There is an all-in charge per vehicle, 2s. 6d. per square foot of space occupied in the hold, irrespective of the nature or value of the load. When returning empty the charge per vehicle is reduced to 1s. 3d. per square foot. These charges are inclusive of accommodation for the drivers. The reduction in handling is a great advantage with fragile and expensive freights, with liquids, with perishable goods or with delicate machinery. Where such specialised vehicles as tankers or cable-lorries are necessary the ferry service enables one vehicle to do the work of two or more.

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* Mr. Cook is a graduate of Liverpool and an Education Officer in the Royal Air Force. This study of the Preston-Larne Ferry was made in the summer of 1950, when he was senior lecturer in geography at Freckleton Training College, as part of a series of local study surveys.

[1] The Tilbury-Hamburg service is still in operation (October, 1952) for the carriage of such commercial cargoes as may be offering, but principally of service vehicles.

In addition to accommodation for lorry and trailer drivers there is " cabin " accommodation for a few passengers on the upper deck. The cabins are comfortable and well-appointed. Meals are taken in the officers' mess, formerly the wardroom. The drivers have 12-berth dormitories which were troop accommodation in the ships' war-time role.

On the Preston–Larne service there are two ships, the *Empire Cedric*, 4,500 tons, and the *Empire Gaelic*, 4,300 tons.[2] Both did valuable war service as Tank Landing Craft ; few modifications, other than the removal of armament, were necessary for their peace-time tasks.[3] They are now the largest ships regularly using the port of Preston, each making two round trips a week. They have a draught of 12 feet aft but by means of " ballast " water tanks forward this can be reduced to 10 feet in order to negotiate the channel of the river Ribble at neap tides.

These vessels have two main decks, an upper and a lower or tank deck, and have large doors in the bows which open on to a ramp to facilitate loading and unloading. Of flat bottomed construction they can slide on to the ramp sufficiently above the water line to allow the opening of the doors and permit a clear " run " from quay to lower deck or *vice versa*. On the Canadian-built *Empire Cedric* is an internal ramp from the hold to the top deck but it is usually more efficient to load this somewhat limited space by derrick. As many as 12 double-decker buses, bound from Leyland to Dublin, have been carried at once on this deck. The ships can carry approximately 60 to 70 vehicles of the 3 to 5 ton class. Those carrying perishable goods are put on the lower deck in such a position that they can be driven out quickly at the arrival port. Great care is taken to secure each vehicle, so that, however much the ship may roll, there is no danger of movement ; chains are used with heavy trestles giving additional support especially to trailers. Wagons with very heavy loads have the weight taken off their springs with large wedges. There is only one inside door to the hold, the key of which is kept by the chief officer throughout the voyage, a method which greatly reduces the risk of pilfering ; the load is driven aboard by the driver and is untouched until he takes the wheel again.

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[2] The *Empire Baltic; Empire Celtic* and *Empire Doric* operate on the European routes. The ships are to all intents and purposes sister ships.

[3] The ships are now known as Transport Ferries, having been modified to meet the requirements of the Ministry of Transport and Lloyds. Certain alterations have been made in the working part of the ship and an orthodox navigating bridge has been added ; improved accommodation has also been provided for ships' officers, crew and passengers.

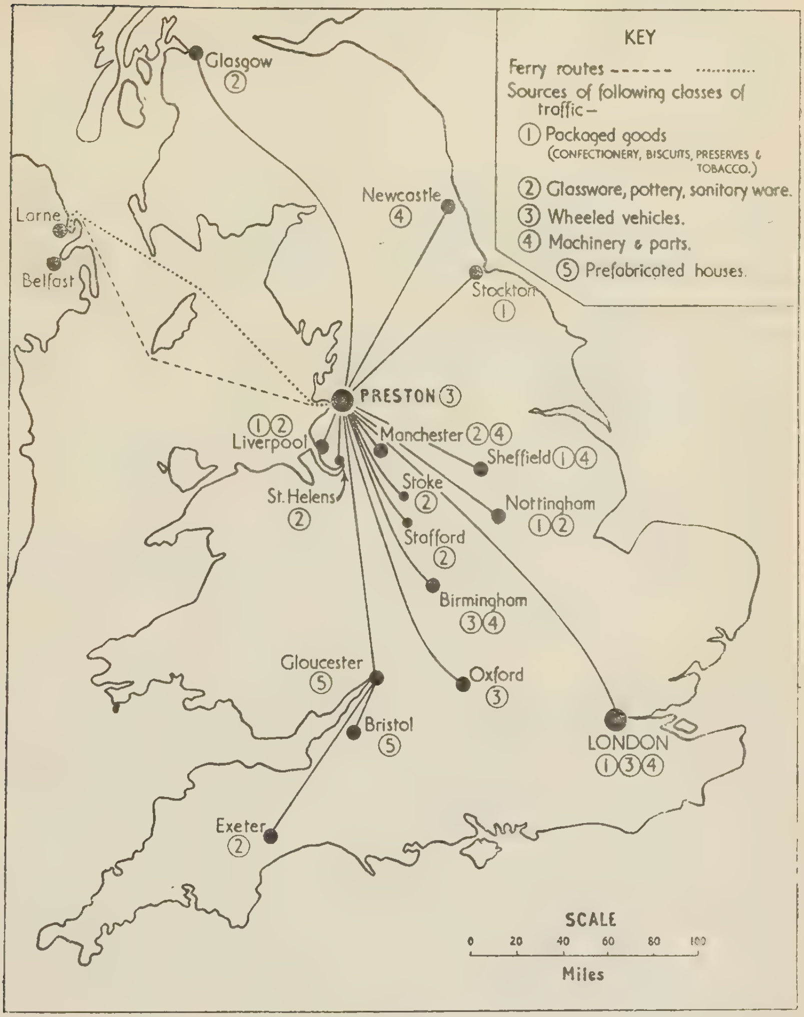

Fig. 1.

As this service has become more widely known the demand for space on the ships has steadily increased. The fullest possible use of deck space is planned by the office staff who receive full particulars several days in advance of all loads intending to cross. The facilities are very popular with C licensees who can now load goods into their own vehicles at the factory or warehouse and deliver in Northern Ireland without further handling. Regular trailer services have been established to provide a door-to-door transport system for traders who do not possess their own vehicles. These are placed aboard at Preston and taken over by Ulster Transport Authority tractors in Northern Ireland ; if they are consigned to destinations in Eire a tractor owned by Coras Iompair Eireann takes over the loaded trailer at one of the border towns such as Newry. Approximately, 50 per cent. of the traffic is of the trailer type, a further saving to the manufacturer as tractors and drivers are not immobilised by the voyage but remain available for other journeys.

The bulk of the traffic is in manufactured goods sent from this country to Ireland. In return certain foodstuffs and raw materials are brought here. Many well-known firms send their own vehicles and trailers by this route thereby gaining valuable publicity in Ireland. Large quantities of sheet glass from Pilkingtons of St. Helens are sent each month in special vans equipped with rubber-lined frames, effecting an enormous saving in comparison with the packing normally required to send glass to Irish markets. Nearly all the building materials and equipment for Courtaulds' new factory at Carrickfergus was ferried by this route. The " Lotus and Delta " Shoe Company of Stafford send shoe components by trailer unit to Bannbridge near Belfast for assembly at their factory there ; the completed and packed shoes are returned to this country by the same route. Several famous sweet and confectionery firms regularly use this route, carrying goods in their own vans and trailers. New motor cars, lorries and omnibuses can also be seen, often on the top deck of the ferry-boats. The Hawker Siddeley Aircraft Company tranships large quantities of prefabricated houses and schools either in crates or mounted whole on special trailers. Apart from occasional loads of granite from the Sperrin mountains the return cargoes are not usually so heavy and bulky, consisting as they do of agricultural produce—butter, eggs fruit and milk. The milk usually travels in glass-lined insulated tankers. Certain classes of linen piece-goods are also sent over from Belfast.

The journey of about 150 miles between Preston and Larne normally takes 14 hours. The usual routes are shown on the map (Fig 1) and pass either north or south of the Isle of Man according to weather conditions. In exceptionally bad weather shelter may be taken in Ramsey or Douglas Bay. Both vessels could make the trip in 9½ hours but care has to be taken to enter or leave the Ribble when there is sufficient water over the bar and when the ' tide rip " under the jetty at Larne is least fierce.

It may be interesting to consider a fully laden lorry leaving a factory in London late on Sunday. The road trip is made by night at an average speed of 20 m.p.h , and Preston is reached on Monday morning. Following a few necessary preliminaries the vehicle is driven aboard into the place allotted by the shipping company and secured by deck chains. Departure from Preston takes place in the afternoon or early evening depending on the tide and Larne is reached some 14 hours later. Within an hour the lorry is driven off the ship direct to Belfast to the firm's agents. After unloading it is ready to return to Larne for the trip back to Preston on Tuesday afternoon or evening. Preston docks are reached the following day, usually well before noon, and the journey to London made overnight.

A NEW METEOROLOGICAL STATION AT KEELE

S. H. Beaver*

THE establishment of the new University College of North Staffordshire in Keele Hall and its surrounding park has provided the opportunity for the setting up of a well-equipped meteorological station.

The enclosure is situated at 586·5 ft. O.D. on a flat lawn to the south of the Hall; its National Grid reference (new style) is SJ 38203447. The equipment here comprises the following:

(i) Stevenson screen with dry- and wet-bulb thermometers, maximum and minimum thermometers, and self-recording hygrograph and thermograph.
(ii) Ordinary 5-in. diameter rain-gauge, and self-recording rain-gauge.
(iii) Grass-minimum thermometer.
(iv) Soil and earth thermometers at depths of 4 in., 8 in., 1 ft. and 4 ft.
(v) Campbell-Stokes sunshine recorder.
(vi) Besson nephoscope.

In the Geography Department buildings are a Kew barometer and an open-scale barograph. Lastly, erected not far from the highest point of the campus (approx. 656 ft. O.D., grid ref. 3811 3451), is a Dines Pressure-tube Anemometer on a 50-ft. mast.

Observations are made at 0900 and 1500 hours, but the self-recording instruments enable a continuous record of all the main phenomena (temperature, humidity, rainfall, pressure, sunshine and wind) to be kept. The records are submitted to the Meteorological Office, which has helped to make the station possible.

Already, after only six months' operation, the records have proved of considerable scientific interest and of immense teaching value. The earth and soil temperatures in particular make a fascinating study, some of the results of which it is hoped to publish in due course. For research purposes the scope of a single isolated station is somewhat restricted, and if studies of microclimate are to be undertaken, instruments will have to be set up in various neighbouring localities.

Even within the College grounds, however, there is some diversity of altitude, relief and aspect which should be worth studying as a varied meteorological environment. Within our own territory too, there is some variety of soil and vegetation cover, and in conjunction with the Biology Department, it is hoped to study the effect of various meteorological phenomena on plant growth.

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* Professor Beaver is Professor of Geography at the University College of North Staffordshire.

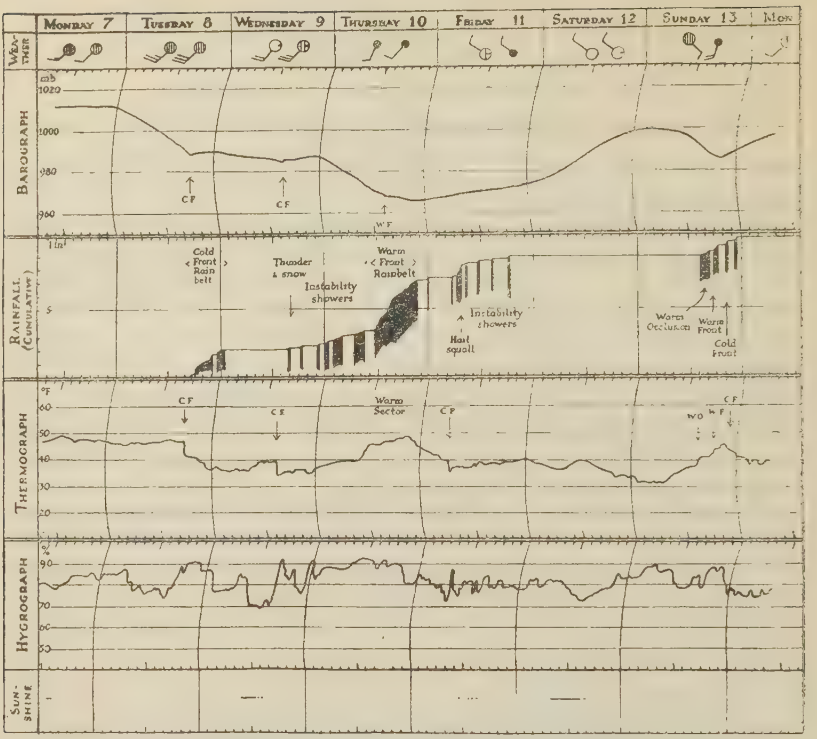

Fig. 1.—Weather records, Keele, January 7th–13th, 1952.

As an example of the interest which can be derived from the autographic records, the accompanying illustration sets out the weather circumstances of the week January 7th to 13th, 1952, and the following notes are offered by way of explanation.

The meteorological situation on Monday morning, January 7th, was that a deep depression lay off eastern Greenland, and an anticyclone over Central Europe, whilst a relatively warm southwesterly airstream covered the British Isles. This airstream maintained a fairly constant temperature (46–48°), with considerable cloud. On Tuesday a trough of low pressure, associated with a deep depression over Iceland and accompanied by a well-developed cold front, moved quickly southeastwards across the country. It crossed Keele at 1800 hours and a kink in the barograph at the moment corresponds to a squall of rain and an abrupt drop of 5° in the temperature as the "tropical" air-mass was suddenly replaced by one of more direct "polar" origin. The rain belt following this cold front lasted, somewhat exceptionally, about 6 hours, and it is faithfully reflected in the hygrograph which indicates above 90 per cent. relative humidity during this period and a sharp drop when the rain ceased, as it did after a sleet squall just before midnight. The unstable polar airstream gave fairly clear skies on Wednesday, and several hours of sunshine sent the temperature up and the humidity down. Then, shortly before

1600 hours, occurred a remarkable phenomenon, a cold front with thunder and a snow shower ; another kink in the barograph, a sudden drop of 6° in the temperature and a sudden rise of 20 per cent. in the humidity. Several more instability rain-showers fell during the night.

On Thursday a fresh meteorological situation developed. A new trough of low pressure, with a well-developed warm front rain-belt, crossed the country. The rain-belt lasted for 9 hours, and the passage of the front is indicated prominently on the thermograph by a 6° rise in temperature associated with high humidity. The maximum temperature on Thursday actually occurred at 2100 hours. On Friday, the trough having passed, another cold front followed ; northwesterly " polar " air replaced " tropical," with a sharp 4° drop of temperature at 0700 and a sharp rise in humidity, accompanying a hail squall. This was succeeded during the day by several more instability showers and a temperature in general about 10° lower than on the previous afternoon.

The polar airstream maintained itself throughout Saturday, with a rising barometer and clear skies. For this one and only day of the week, the thermograph shows " normal " solar control of temperature, and the sunshine is accompanied by low relative humidity. On Sunday, however, a new disturbance approached, centring over Iceland and with a succession of fronts crossing Britain. The northwesterly airstream gave way to a light southeasterly wind, later veering southwards, and a warm occlusion, followed quickly by a warm front, each accompanied by a rain-belt, sent the temperature up rapidly, a 15° rise occurring between 0800 and 2100. Then came a cold front, accompanied by a fall in temperature and humidity and the re-establishment of a polar airstream.

This week, so full of meteorological variety, was typical of winter conditions in Britain, in which solar control of temperature is almost completely obliterated by the frequent changes of air-mass and the passage of the warm and cold fronts which, with their associated rain belts and line-squalls, accompany the passage of troughs of low pressure.

CORRESPONDENCE

Sir,

I wonder whether the Geographical Association would extend its already invaluable services to teachers by acting as a clearing house for information gained and needed by pupils in schools. It might, for example, give an additional value to a project undertaken by an urban school if its findings could be exchanged for similar ones by a rural school. In my own case, I have for some time been trying to find a school which does the simplest possible local survey, as we do in the first Grammar School year, so that when we find the numbers of fields under various crops one of the children could write to a pupil in a school, say, in Cornwall and compare the percentages. Or again, a question might be raised on the subject of opencast mining; how useful it would be if the pupil concerned were able to write direct to a school in an opencast area. Furthermore, in a school where field work is difficult to organise for any reason, this "field work by correspondence" would bring home to a child the reality of facts he has learned from books. Many more examples of the use to which this kind of scheme could be put will readily occur to teachers.

Might I suggest that if a questionnaire could be inserted into an issue of *Geography*, no doubt voluntary help would be forthcoming to deal with the replies. Such a questionnaire could be quite brief and ask simply for the name of the school in which the member is teaching, and the sort of questions that his or her pupils might be able to answer about their own locality.

Incidentally, the fact that their school is to be consulted on a particular topic would give added zest to local study by the pupils concerned.

Dorothy E. Cocks.

Eggar's Grammar School,
Alton, Hants.
June, 1952.

The suggestion to exchange "field work" with pupils in schools in other areas was raised during one of the discussions at the Summer School for Field Work in August, 1952, and many teachers present felt that such a project would be both useful and stimulating for children in their own schools. Members who would be interested in participating in such a scheme are invited to send their views to the Assistant Secretary at the Geographical Association headquarters office.—Ed.

OBITUARY

Professor C. B. Fawcett

Professor Fawcett, who died on 21st September, was born in 1883. He began his university education at Nottingham and then became a student under Professor Herbertson at the Oxford School of Geography. His first major opportunity came when he was elected lecturer in geography and head of department at what was then the University College, and is now the University of Southampton. Thence he moved, in 1919, to a lectureship and headship of department in Leeds University.* This became a Readership in 1920 and he held it until 1928, when he was elected Professor of Geography in University College, London. He was a loyal and enthusiastic worker for our subject and for the Association, serving as a Member of Council and Executive and on many committees, and he gave the Herbertson Memorial Lecture in 1946 on "Marginal and interior lands of the

Old World." It had been the hope of many members of the Association that he would accept the Presidency after his return from abroad.

After his retirement in 1949, at the age-limit, from University College, London, he was invited to Clark University, Worcester, Massachusetts, where he had already held a visiting Professorship. On completion in 1951 of their stay at Clark, Professor and Mrs. Fawcett planned to complete a circuit of the world by coming home via the Pacific and Ceylon, where Professor Fawcett was a visiting Professor for a time at Colombo University. He was taken ill while attending the India Science Congress at Calcutta, but had apparently recovered when he returned to England last spring. Professor Fawcett's central geographical interest was in population problems and questions of administration. A book he published in 1919 on the *Provinces of England* suggested devolution of some parliamentary powers to seven regions in England as a means of reducing congestion at Westminster and strengthening local government. The problem of feeding an ever increasing number of mouths haunted him and he worked out estimates of the cultivable land of the world. He was much impressed by the value of the British Commonwealth of Nations as an experiment in peaceful international co-operation. His *Basis of a World Commonwealth*, published in 1941, gave views he had long championed concerning the possibilities of close union between Anglo-Saxon North America, Britain and Western Europe. In this respect he was one of the pioneer thinkers on the subject of what is now N.A.T.O. He and Mrs. Fawcett won the affectionate respect of the members of the Association, and she has our deep sympathy in her bereavement.

H. J. Fleure.

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* To his work at this period one of his students, later a teacher of geography, pays this warm tribute : " At Leeds University, where I studied under him, his lectures were a source of inspiration ; he was so clear, interesting and full of fervour that one could not fail to gain much in outlook and clear thinking. He was never too busy to attend to the difficulties of his students."—Ed.

Sir Richard Gregory, Bart., F.R.S.

Sir Richard Gregory, who was President of our Association in 1924, died on September 15th, 1952, at the age of 88 years. Born in 1864 and educated in Bristol and at the Royal College of Science, London. Sir Richard later became a member of the Staff of *Nature*, under the editorship of Sir Norman Lockyer, whom he succeeded in 1919. His work in connection with *Nature* and with the Macmillan firm, to which the famous weekly belongs, was of such value to science that, in 1933, Sir Richard was elected into the Royal Society under its Rule XII empowering admission of persons who have rendered conspicuous service to the cause of science or whose election would be of signal benefit to the Society. He was created a baronet in 1931.

Sir Richard's interest in education is evidenced by his joint editorship of *The School World* and *The Journal of Education*, and in 1922 he presided over the Education Section of the British Association. In his address he pleaded for a universal training in general science which he envisaged as an expanded physiography giving much attention to facts of climate. He accepted the presidency of our Association for 1924 and spoke to us of the variations of British climate based on historic records. His inferences are now receiving a large measure of confirmation through the work done at the Rejkavik University, Iceland. He had been a member of the Association's Committee from 1899 to 1906 and had contributed an article to *The Geographical Teacher* of 1908.

Presiding over the British Association in 1939, Sir Richard remained in office until 1946 and gave special attention to the Social Relations of Science. His deep sincerity in the cause of peace led him to denounce the use of the atomic bombs in Japan, and he was always suspicious of the use of power and anxious to think well of new ideas and schemes in public affairs. His first wife died after a long and distressful illness in 1926. In 1931 he married Miss Page, daughter of the famous editor of the Victoria County Histories.

H. J. FLEURE.

FREDERICK WILLIAM MORGAN

His friends were shocked to hear of the death of F. W. Morgan on June 6th, 1952. It is true that he had suffered from high blood pressure some years ago, but the recurrence of this condition came as a surprise to most of us, and its very serious nature as even more of a surprise. He was 42 years of age.

Morgan went up to Cambridge in 1928 and took a First Class in the Geographical Tripos of 1931. After some years engaged largely in research and tutorial work at Cambridge, he was appointed as lecturer at the University College at Exeter in 1936 where he remained until 1948. These years were broken by the war when he served as a Geographer at the Admiralty (1941–44). In 1948 he moved from Exeter to the London School of Economics.

Looking back upon his academic career one can discern three strands. His earliest, and most abiding interest was in Historical Geography and in the Domesday Book, and his papers on Domesday Berkshire, Wiltshire, Somerset and Devon show great qualities of balanced and penetrating scholarship. These researches were interrupted by the war, but he returned to them, and was at work on Domesday Geography in the months before he died. His loss as a contributor to *The Domesday Geography of England* is a heavy one. During the war, his work at the Admiralty won the respect and admiration of all his colleagues. His unwearying devotion to the task in hand was outstanding. Those of us who were closely associated with him will always retain a memory of " Fred " bent over a desk, working late night after night, pursuing some problem in a patient and seemingly unhurrying manner, sifting his material, and being never satisfied until all possible sources had been checked and re-checked and the whole set out in a clear and logical manner. And this went on month after month. In the post-war years, his time was shared between his Domesday work and a new interest in ports and their hinterlands. Several papers bear witness to his careful and illuminating investigation, and in particular, his book on *Ports and Harbours* appeared just a week before he died.

Morgan was not a man of passing enthusiasms. Having set a course he followed it with steadfastness and absorption. He took no light view of " a piece of work," but brought to it exacting and severe standards of scholarship. These academic characteristics were in keeping with his personality as a whole. Those in close contact with him were always conscious of hidden reserves of strength. He was slow to comment either on an academic topic or on a personal matter, but, when made, the comment revealed great shrewdness and an intellectual profundity. He was a man of deep loyalties who combined firm convictions with charity of mind. He was also a shy man who somehow won people's affection as well as their respect. He leaves a widow and a small daughter to whom all his friends, and other admirers of his work, will wish to extend their warm sympathy.

H. C. DARBY.

MRS. M. S. ANDERSON

Margaret Swainson Anderson (née Willis) died on September 15th. Many geographers knew her through her written work and will realize that an able scholar has gone, at an age when years of teaching and writing might well have lain ahead of her. A smaller circle of former Cambridge students, especially those of Girton College, will mourn a remarkable teacher and a good friend. Those of us who work in the Department of Geography at Cambridge know that we have lost a colleague whose approach to geographical work was in many ways unique because of her grip of, and interest in, the Natural Sciences. It was this distinction in geographical technique which led to the hope in Cambridge of a further and thorough treatment of Biogeography in the Tripos course. Mrs. Anderson's personality was much valued in the Cambridge Department and her contribution to it in many respects irreplacable. We shall remember her as a lively and warm-hearted woman with a great range of interests and competence, as good with her hands as with her head. She had a marked and pleasant individuality in the world of geographers, and it is hard to reconcile ourselves to her going.

HARRIET STEERS.

MISS K. C. BOSWELL

Miss K. C. Boswell, 1889–1952, member of the Society of Friends and Physical Geographer, died of heatstroke, on September 18th at Beni-Abbes, Algeria.

She was connected for most of her life with the University of Southampton, then University College. She graduated first in the Biological Sciences and later in Geography, becoming a lecturer 1926–1944 She spent 1945–1949 as Co-Principal of Friends' College, Jamaica, on her return resuming the translation of Walter Penck's *Die Morphologische Analyse*. The proofs were finished in the last days, before leaving for the International Geological Congress, attending which she died.

A most able geographer and teacher, she produced in her students a lasting enthusiasm for the subject and an enduring affection for herself. Her friends are everywhere, in every station of life, of every colour and creed. Her unselfconscious goodness was her gift to all of us.

F. C. MILLER.

To Miss Miller's tribute it would seem proper to add some paragraphs from a letter, dated September 20th, written by one of Miss Boswell's companions on the Saharan excursion. Leaving Algiers on September 16th that party had flown to Colomb Bechar and proceeded thence by army trucks to Beni-Abbes, arriving there about eight in the evening: the next day was a rest day. " Beni-Abbes is in the depths of the Sahara, a rather large oasis supporting a fair-sized little town, many date palms and little gardens. Our field trips start about two hours before dawn so that we may reach our objective in the cool of the morning and end about noon. On Thursday (18th) Miss Boswell went out with us; she seemed well rested after Tuesday's rather tiring journey. At our first stop we climbed a hill and she was the first one to scale it. I fear she was entirely unprepared for the heat and after the exertion she was utterly tired. She rested in the shade of the truck, had water and a sandwich but seemed unable to recuperate. By the next stop we were worried about her and sent her in a jeep back to the smaller oasis of Zehamrs. There the natives gave her shelter and brought her dates and water, and when we started back she seemed better. The sun and the heat were too much for her, however, and she lost consciousness about 12 miles from Beni-Abbes. At the infirmary the French doctor and nurses gave her oxygen and did everything possible for her, but she never regained consciousness and died late in the afternoon.

Yesterday at six in the evening, we gathered in the back of the infirmary for her funeral. From the hill we looked down on the little town lit by the setting sun. The captain of the fort came with an honour guard of soldiers and the mayor was there in his long white robe and red cape of office. The service was in the Quaker tradition, simple, dignified and reverent."

GEOGRAPHICAL ASSOCIATION

ELECTION OF PRESIDENT FOR 1953

The nomination and election of Dr. O. J. R. Howarth to the office of President of our Association for 1953 was carried with acclamation at the spring meeting of Council. Dr. Howarth, for many years Secretary of the British Association and the friend of geographers through more than half a century, was President of Secton E in its centenary in 1951. He honours this Association in accepting office as our President in the year of our Diamond Jubilee.

PROFESSOR H. J. FLEURE'S 75TH BIRTHDAY

All members of the Association will wish to associate themselves with the greeting and good wishes extended to Professor H. J. Fleure by the Executive Committee and Council on the occasion of his 75th birthday, recently celebrated. May we wish him many more happy returns of this day.

ANNUAL CONFERENCE, 1953

The Annual Conference will be held in the London School of Economics from December 31st, 1952 to January 3rd, 1953. A copy of the programme is included in this issue.

Four new members of Council will be elected at the Annual General Meeting to replace retiring members, and nominations signed by four members should be sent to the Honorary Secretary not later than November 30th.

ANNUAL CONFERENCE TEAS

As before, one of the teas during the Conference will be provided by non-metropolitan members and branches. Members are reminded that donations, large or small, will be gratefully received at headquarters to meet the cost (£12) of this function ; the donations may be sent individually, or collectively through branches, and all will be acknowledged. We thank both branches and members who have already sent donations to headquarters.

FORTHCOMING SPRING CONFERENCES

Arrangements are already well in hand for the Spring Conference which is to be held from April 7th to 11th, 1953, at Lincoln. Members will be accommodated at the Training College, by kind invitation of the Principal, our longstanding friend and member, Miss Edith Butcher. A very attractive programme of lectures and local excursions has been arranged. The cost of the Conference to individual members, including residence and excursion expenses, should not exceed £8 ; early application for college residence should be made as soon as the programme and reservation forms are circulated. These will be issued with the January number of *Geography*. The Honorary Conference Secretary is Miss M. Goodrich, lecturer at the Training College ; the Excursions Secretary is the Hon. Secretary of the Lincoln Branch, Mr. J. Bell, 18, St. Catherine's Grove, Lincoln.

Invitations have been received to hold the Spring Conference in 1954 at Exeter, and in 1955 at York.

The Association places on record its thanks to Dr. Margaret Davies for her efforts in organising a highly successful Summer School at Rhoose, Glamorgan, during August last. Dr. Davies' report is published below.

SUMMER SCHOOL, VALE OF GLAMORGAN, 1952

Report by the organiser, Dr. Margaret Davies.

The Association's summer school for field-work in geography was held during the first half of August at Coleg y Fro, Rhoose, on the Glamorgan coast. Fifty-two resident members and a dozen local members attended the course. A multiplicity of financial and domestic matters were dealt with by Miss Marguerita Oughton and to her and to Mr. P. R. Heaton, who gave valuable advice on teaching methods and on field work with boys in Glamorgan, the local organiser is extremely grateful.

During the first week of the course the Vale of Glamorgan was studied in relation to its Welsh background and in contrast with upland Wales. Professor Emrys Bowen, lecturing and leading discussions for most of the first Sunday, provided stimulus and *hwyl* and initiated many enquiries which were enthusiastically pursued in succeeding days. He later demonstrated that the South Welsh iron and steel trade can be vividly portrayed by means of gum, outline maps, coloured squares and anecdote. Mr. H. Carter discussed the physical geography and Mr. G. M. Howe the climate and agriculture of the Vale. "A secondary maximum caused by convection rain occurs in August." In 1952 most of the August maximum fell during August 2nd–16th, but, thanks to members' enthusiasm, did not curtail field work. Mr. J. Oliver described the soils and vegetation of Glamorgan and Dr. M. Davies its historical and agricultural geography. Mr. D. H. Morgan of the Board of Trade (Wales) made a contribution to our study of modern industry which was as outstanding as his official contribution to the redistribution of industry and reduction of unemployment in Wales generally. His lecture demonstrated how industry is to-day largely controlled by human problems. We will not forget that the whims of a manufacturer's wife are often more important than transport in the siting of light industry, nor will we forget Mr. Morgan's own very human and successful approach to the problems of the South Wales Development area.

Field studies to illustrate the lectures took us through the Vale and coal-bearing hills, to the northern limestone rim and to Merthyr Tydfil, where Mr. A. G. Harris demonstrated Cyfarthfa and Dowlais ironworks sites and many new factories grouped on them. Ogmore Vale miners' training centre gave our large party a condensed view of underground conditions and equipment. Groups made coast and farm studies and all members visited the Welsh Folk Museum, which is developing in interest and beauty, and the National Museum of Wales where many members showed envy of the Schools Service available to Wales. Mr. Emlyn Evans, Geology Officer of this service, gave much time, enthusiasm and skill to the summer school, in the National Museum, in the field and in vivid lectures at Coleg y Fro.

Many evenings, some early mornings, and a weekend, were devoted to discussions of field study with children. Mr. R. C. Kiloh lectured on this topic and showed Dr. E. W. H. Briault's film of the Box Hill area by way of example. During the second week more detailed field studies were made of farms and field systems, of land use and cliff structure. The last three days were spent at the Abbey Steel Works, Margam, at Newport Docks and board mills, at Llandarcy Oil Refinery and its dock, in paper mills, optical, gaskets and cosmetics factories, in wire-rolling, nail, and flour mills, according to members' tastes. These visits to factories were arranged by Captain W. G. Watts and Mr. L. T. Murtha of the Board of Trade (Wales) and were invaluable in demonstrating the striking post-war changes in Welsh industry and the greater prosperity of the ports of Swansea and Newport. At Newport the Deputy Mayor, Councillor L. F. A. Driscoll, showed us the civic centre and at Swansea the Mayor, Councillor W. T. Mainwairing Hughes presided at Swansea's civic centre and at a luncheon given for us by the National Oil Refinery, Llandarcy, and, with the Mayoress, subsequently completed the day's excursion with us. On the last day of the course, Mr. C. T. Parry lectured on, and later demonstrated, the site and development of Cardiff. We were delighted to welcome a member of the staff of the Times Educational Supplement to the course. The influences of geographical environment on this correspondent may be seen in No. 1947 (August 22nd, 1952) of that journal. Glamorgan, with its strongly contrasted physical, human and economic features, is an absorbing area for field studies and the local organiser greatly appreciated the keen response of geographers of widely differing interests and home areas to the capabilities of the district for personal study and their consideration of its possibilities for future school journeys.

Proposals for a Summer School of Geography in 1953

Some members have expressed a wish for the Summer School to become an annual fixture. The Hon. Secretary will be glad to explore the possibilities of such a scheme, and would welcome views regarding members' needs in this respect, by December 31st, if possible.

Professor Wooldridge and Dr. Briault have expressed their willingness to organise a summer school in 1953 to demonstrate practical field techniques in the teaching of geography. Before committing ourselves to the booking of accommodation, etc., it is essential that we should have some indication of members' interests in such a course as soon as possible, and any teachers of geography who may wish to avail themselves of this opportunity should let headquarters know at once.

PRIVILEGE SUBSCRIPTION RATE FOR STUDENTS

The subscription rate for students became 8s. per year as from September 1st, 1952. The decision to raise the student subscription was reached with reluctance after discussions in Council during the past year.

BRANCHES AND BRANCH NEWS

The Southwest Essex Branch wishes to place on record its appreciation of the loyal service of Mr. G. A. German, who retired from the office of President of the Branch at the end of 1951, after some twenty years of strenuous active work as a branch officer. During his connection with the branch, Mr. German was responsible for a wide variety of its most useful and original activities, which included teaching courses, exhibitions and extensive fieldwork. He will be known by many members outside the branch for his interest in examining and the teaching of our subject, and as a member of the Secondary Schools Section Committee. We wish him a long and happy retirement at his new home in Devon.

Meetings are being arranged to discuss the proposal to revive the Glasgow Branch of the Association following a number of enquiries about activities in that area. Mr. G. Rae, of Jordanhill Training College, Glasgow, W.3, would be very glad to hear from members in or near Glasgow who may be interested in the reforming of this Branch.

The Hon. Secretary of the Portsmouth and District Branch will gladly supply information of local meetings (monthly) to members in the area not already in the branch. His address is St. John's College, Southsea, Hants.

We should be very glad to hear at headquarters from interested local members in Southampton and Bournemouth, where the revival of branches has been proposed.

RECIPROCAL EXCHANGES OF MEMBERSHIP AND PUBLICATIONS WITH THE AMERICAN NATIONAL COUNCIL OF TEACHERS OF GEOGRAPHY

Arrangements are under consideration whereby an exchange of publications can be effected between British and American teachers of geography. The scheme has not yet been formalised in full detail ; it is proposed that interested members of our Association should pay one guinea annually to headquarters (additional to their membership fees) for which 4 issues of *Geography* and one other publication of our Association will be sent to a member of the American Council of Teachers of Geography who wishes to make the exchange. The American member will then pay $4.25 to the American National Council, so that the American *Journal of Geography*, published in nine parts annually, and one other publication can be sent to the British member.

The Honorary Secretary has already received the names of some American members who are anxious to be enrolled in this scheme and she will be very glad to receive the names of members of the Geographical Association who are interested and wish to co-operate ; no payments should as yet be sent to headquarters.

It is hoped that, apart from the obvious immediate advantage that this scheme offers to British members, it will foster closer relations between the two transatlantic Associations of teachers of geography, and the understanding of mutual teaching problems.

ACKNOWLEDGMENT

The Editor wishes to thank Mr. Robert Atkinson for permission to reproduce his photographs in the article " Craig and Ben—their life and song," by Dr. A. Geddes, and also to express the author's thanks for the generous grant towards the cost of the reproductions made by the Carnegie Trust for the Universities of Scotland.

CORRECTIONS

Our attention has been drawn to the error, in the footnote on page 142 of the July issue of *Geography* (Vol. XXXVII part 3). Professor Spate should have been described, not as Director of the Research School of Pacific Studies at the Australian National University, Canberra, but as Professor of Geography in that institution.

The attention of readers is also drawn to typographical errors on page 147, in which lines 1 and 4 have inadvertently been transposed ; and on page 149, in which footnotes 7 and 8 have also been transposed.

REVIEWS OF BOOKS

WITH very rare exceptions, books reviewed in this journal may be borrowed from the Library by full members or student library members of the Association.

Wessex. R. Dutton. 14 × 22 cm. viii + 128 pp. London: B. T. Batsford, Ltd. 1950. 12/6.

Wessex is a kingdom of many chroniclers and elastic boundaries. Mr. Ralph Dutton defines the name as a "convenient designation for the central section of southern England which is neither south-east nor south-west." But he is a Wessex man by birth and a negative definition is unsatisfying to him, so he gives a brief account of the rise of the kingdom of Wessex. In it he states categorically that the nucleus of that kingdom is Hampshire, a point much debated by the historians. In his first chapter, on Prehistoric and Roman Wessex, he gives a short, interesting account of neolithic and later immigrants, of their way of life and the parts of the country they inhabited. His argument that neolithic men could not fell trees "with only flint instruments," and therefore settled only on open sites has, however, been disproved. Grahame Clarke has shown that with polished flint axes and with fire neolithic tribes were able to clear the light forest which may well have covered large areas of chalk downland at that time. With regard to the Romano-British villas of Wessex, Mr. Dutton is again too dogmatic. We have little certain knowledge about their organisation and no one has yet proved that villas were organised "on the same principle as the mediæval manorial system."

The rest of the book is occupied by descriptions of the countryside, its villages, buildings and people. Mr. Dutton divides Wessex into four parts "dictated principally by natural features of hills and valleys and the soil which lies beneath them," an approach which the geographer will greet with joy. But disappointment is in store. Admirable in intention, Mr. Dutton's brief descriptions of the geology will not satisfy the more knowledgeable nor greatly enlighten the rest. It seems most unfortunate that a book with such a wealth of beautiful pictures cannot give the reader a good map. These things apart, it is a delightful book.

G.J.F.

Off To The Dales. Jessica Lofthouse. 13·1 × 22·1 cm. 314 pp. London: Robert Hale, Ltd. 1950. 15/-.

The changing character of the Dales, at different seasons and in different weather conditions is brought out by descriptions of walks at various times of year, from February to November. The accounts refer to upper Wharfedale, Ribblesdale, Airedale, Wensleydale and Swaledale, and many out-of-the-way places within this area are visited.

Historical excerpts add interest to the accounts of the routes followed, but the physical setting is rarely mentioned. Written in colloquial style, the book gives many pleasant glimpses of the Dales and captures the character of the changing scene in the villages and on the open fells. It gives an insight into the past and present life of the people, and is written by one who clearly appreciates the Dales to the full.

C.A.M.K.

England Handbuch. Tatsachen und Zahlen über England und das Empire. Paul Helbeck. 12 × 17 cm. 326 pp. + 15 pp. maps. Georg Westermann Verlag, Braunschweig, Berlin, Hamburg. Braunschweig. 1950.

This pocket-size booklet aims at being a general source of reference of the British Isles and the Commonwealth for the German reader; to provide facts, not opinions. Since it deals with a great number of topics only a part of the whole is strictly geographical. Inevitably some information is already outdated, and the publication of occasional supplements would be an advantage. Given that, it fulfils its function very well. The term England in accordance with German custom is used in the title to mean the British Isles; within the book the correct terms are usually applied.

K.A.S.

Types of Farming in Scotland. Dept. of Agriculture for Scotland. 15 × 24·5 cm 100 pp. Edinburgh : H.M.S.O. 1952.

This booklet forms a valuable addition to the published information on agriculture in Scotland. It summarises the results of an economic classification of agricultural holdings made by the Farm Economics Branch of the Department of Agriculture for Scotland on the basis of a thorough and comprehensive analysis of the Agricultural Returns for June, 1947, and December, 1946. After regrouping certain detached portions of land, the 64,000 agricultural units were divided into full-time, part-time, and spare-time farms, and other agricultural units, the division except in the fourth category being based on the number of hours of work required per annum :—full-time, over 1,800 hours (but reckoning one-man farms requiring between 1,800 and 2,400 hours as representing a measure of under-employment) ; part-time, 600 to 1,800 hours ; spare-time, less than 600 hours. The full-time farms, which account for over 90 per cent of the agricultural land except in the Highlands (71 per cent.), were then classified into types according to the nature of chief farm activity or activities, namely, hill sheep, stock rearing, stock rearing and feeding, cropping, dairy, dairy with hill sheep, horticultural, intensive livestock, unclassified. Numerous statistics for each type are given in tables in the text and in appendices for the country as a whole and for five major sub-divisions, namely, North-East, East, South-East, South-West, Highlands.

Dot distribution maps for each type and sub-type are included as well as cartograms showing county averages for such features as rent per acre, size, proportion of farm land under the plough, regular hired labour force, family farms as percentage of all full-time farms, size of ewe flock on hill sheep farms, and of dairy herd on dairy farms. A larger folded map of predominant farming types provides a synthesis of the dot maps and adds to the value of this useful booklet for students and teachers of geography. C.P.S.

The Provinces of France. D. Ogrizek (ed.). 14·5 × 19·5 cm. 508 pp. London : McGraw-Hill Publishing Co., Ltd. 1952. 30/–.

Seventh in the series " The World in Colour," this is a book for leisure, not for instruction. A brief introduction to the history and art of the provinces of France is followed by essays on each of the 21 provinces by as many authors. The whole eulogises the beauty and glorious cultural heritage of the provinces of " the finest country in the world." If, at the end, the reader needs any further inducement to see for himself something of the infinite variety of the French landscape, or taste the provincial dishes so seductively described, the concluding summary of the spas, sports centres and museums of France is most inviting. This may be a magnet for the would-be tourist, but it is a delightfully written book, superbly illustrated by some 350 colour reproductions. A.J.H.

Return to Normandy. Vivian Rowe. 14·5 × 22 cm. 191 pp. London. Evans Bros., Ltd. 1951. 12/6.

This is a travel book which will appeal to those who yearn to travel and lack facilities, and which has good illustrations of châteaux, cathedrals, towns and landscapes. Various itineraries cover the region from Dieppe westward to Coutances and the Cotentin. One of them passes along the D-day coasts but beyond stating that the sunken blockships are still to be seen offers very little picture of what post-war reconstruction has achieved. The text is overweighted with the past of the Norman Dukes, and the people and atmosphere of the Normandy of to-day seem to have been neglected. Nevertheless the book has much of interest to charm the general reader. It is of little value for the professional geographer.

A.D.

Caucasian Journey. Negley Farson. 14 × 28 cm. 154 pp. London : Evan Bros., Ltd. 1951. 12/6.

This is a most readable and vivid account of a journey made by the author in 1929 from Moscow via the rivers Moskva, Oka and Volga, across the Don and Kuban steppes and finally up the Western Caucasus to, but not across, the Klukhor Pass. Seventeen photographs illustrate both scenery and racial types. Intimate details of travel from day to day ; in sleepy river barges, in busy cities, on desolate plains and among many wild survival groups in the Caucasus bring home the variety and vastness of European Russia. A book to read, whether as a picture of an unvisited land, or as a nostalgic reminder of haunting beauty. R.M.F.

The Refugees in Lower Saxony. Niedersachsen und das Fluchtlingsprobelm. Heft 1. Die Heimatvertriebenen in Niedersachsen. Heft 2. Tabellenband. Hans J. Malecki. 20·5 × 29·75 cm. Heft 1, 80 pp.; Heft 2, 193 pp. Hannover. Niedersachsiches Amt für Landesplanung und Statistik. 1951. n.p.

Readers who attended the International Conference of Teachers of Geography held at Sheffield in August, 1951, will remember Professor Kurt Brüning of the *Akademie für Raumforschung und Landesplanung* at Hannover. Through his kindness the Association has received a number of current German publications in land planning and related fields, which will be reviewed in *Geography*. The first to be noticed is a publication on a subject of great importance and urgency, that of refugees in Germany.

The refugee, like the political prisoner, is an international figure; whatever the faith or nationality, the misery is the same. The Eastern Germans were not the first refugees, and it is already clear, alas, that they are not to be the last, but it is still difficult to grasp the implications of this movement of, it is estimated, twelve to thirteen million people. In this publication, written in German, English and French, we are given, plainly and unemotionally, the facts of the movement as it affects Western Germany and, in particular, Lower Saxony. An account is given of the attempt to absorb the refugees into an economy shattered by war, and of the unequal share of the burden carried by the northern *Länder of* Lower Saxony and Schleswig-Holstein. Most important of all, it is possible with the help of an excellent series of diagrams and maps to follow a major migration of peoples, which at a cost in human suffering that can scarcely be conceived, has radically changed the geography of Germany and of Europe. T.H.E.

The Beauty of Morocco. Rom Landau. 14 × 22 cm. 167 pp. London: Evan Brothers, Ltd. 1951. 12/6.

This is an attractive book for beginners in Moroccana, for intending tourists in Morocco who have not been there already, and a pleasing nostalgic for those who have some acquaintance with the country.

A hybrid between a traveller's descriptive account of places, people and experiences and a guide book, it contains a summary glossary of useful Moorish terms, a useful appendix of information for travellers of the tourist type, and a most sensible homily on appropriate behaviour between visiting Europeans and the Moors with their innate courtesy and graceful manners.

The author's readable literary style is well-known from his many books on a variety of subjects, and this, combined with his strong attraction to the Moors and Morocco, has resulted in a very readable and sensitive work, while factually, the book is generally reliable and up-to-date.

Included are 16 full-page photographic illustrations, mostly of well-known subjects, but from new viewpoints, and all of artistic merit, but only one map, an end-paper outline, which indicates little more than locations of principal towns, villages and oases described in the text.

W.F.

An Introduction to the Geography of the Canadian Arctic. Canada, Dept. of Mines and Technical Surveys, Geographical Branch. 15·5 × 23·5 cm. xiii + 118 pp. Ottawa. 1951. 50 cents.

The Canadian Arctic has been attracting much attention in recent years and the time was ripe for a compilation such as this. It may contain little that is new but it groups together in logical sequence a sketch of what is known of the far north of Canada. It is by many authors under the general direction of Dr. J. W. Watson, Director of the Geographical Branch of the Department of Mines. Dr. Watson has had the same difficulty that other writers have had in defining the Arctic area. In popular usage it is hard to displace the Arctic Circle as a boundary, but geographers know that as such it has no value. Dr. Watson wisely accepts the meandering line of the tree limit as his boundary. Among other topics he discusses the peculiar economy of the Eskimo and their probable derivation from reindeer hunters, though this discussion suffers from the brevity of the book. But on the whole one must commend this excellent and inexpensive little book and its valuable maps. R.N.R.B.

Uruguay : South America's first Welfare State. George Pendle. 13·5 × 21 cm. viii + 100 pp. London : Royal Institute of International Affairs. 1952. 11/6.

Like its predecessors this little book contains a great deal of concise, useful information. The chapter on the land and the people is brief and disappointing as an introduction to the geographical background. Social history is more fully dealt with and the description of the 20th century emergence of Uruguay as a welfare state will be of special interest to many readers. The introduction of free and compulsory education in 1877, the contrasts between Montevideo and the interior, and the effects of rural emigration on the meat industry, are among the many topics discussed. Most useful to geographers are the 34 pages giving details of production and foreign trade, and a comprehensive and up-to-date bibliography. A.J.H.

The Atmosphere. Peter Hood. 17·5 × 23·5 cm. 64 pp. London : Oxford University Press. 1952. 8/6.

This is the second volume of the Oxford Visual Series designed to explain natural phenomena to those who can "learn better if they can look as well as read." In fulfilling this end in the sphere of meteorology the authors have naturally laid heavy stress on cloud height and cloud form. The photographs are good and the diagrams clear and convincing. The book forms an attractive introduction to meteorology and may also be handled with pleasure by those who already have some acquaintance with its mysteries. P.R.C.

Upper Winds over the World. C. E. P. Brooks, and others. Air Ministry Met. Office. Geophysical Memoirs No. 85. M.O.499e. 21·5 × 28 cm. ii + 150 pp. London : H.M.S.O. 1952. 17/6.

The problem attacked is to construct roses of wind speed and direction for any place on the earth's surface at any height above sea level up to 40,000 feet. Actual observations are quite insufficient for this purpose but it was found that in the free air the distribution of the winds approximates to the normal circular distributions about the vector mean wind. Hence a wind rose can be constructed if the vector mean wind and standard deviation are known. The evidence for this is recapitulated in Part I and tables are given to facilitate the calculations. Part II of the memoir gives world charts on Mercator's projection of the mean heights of the isobaric surfaces of 700, 500, 300, 200 and 100 mb. for the four seasons December to February, March to May, June to August, and September to November, with an account of the method of construction. Part III gives charts of the mean standard vector deviation for the same levels and seasons. There are also seasonal charts of stream-lines in the inter-tropical belt.

N.P.

Characteristics of Air Masses over the British Isles. J. E. Belasco. Air Ministry Met. Office. Geophysical Memoirs No. 87. M.O.530b 21·5 × 28 cm. 34 pp. London : H.M.S.O. 1952. 2/6.

This memoir is a contribution to the synoptic climatology of the British Isles and is an investigation into the characteristics of the more important physical properties of the atmosphere in subdivisions of tropical, polar and indeterminate air masses. In Part I there is a discussion of the data used, the classification of the air masses selected and the results of a statistical test into the reality of the temperature difference between air masses. Part II contains a discussion of the influence, in summer and in winter, of the different air masses on the vertical distribution of temperature and water vapour and the degree of thermal stability of the atmosphere from 950 to 450 mb. A discussion of the changes which the physical properties of tropical maritime and direct polar air undergo as these air masses travel to the British Isles is included. Part III comprises an examination of the incidence of the different air masses at Kew, Scilly and Stornoway and of the influence of these air masses upon the surface temperature and humidity at Kew. The appendices are tables giving the incidence, temperature, wet-bulb potential temperature, vapour pressure and degree of thermal stability of each air mass. Tephigrams of the average conditions in summer and winter in most of the air masses and the maps showing the generalised tracks of the air masses are included. Despite its slimness this memoir makes an invaluable contribution to an understanding of British climatology in terms of the modern concept of air-mass climatology. N.P.

Solar Radiation at Kew Observatory. J. M. Stagg. Air Ministry Met. Office. Geophysical Memoirs No. 86. M.O.530a. 21·5 × 28 cm. 37 pp. London: H.M.S.O. 1952. 3/6.

The records of diurnal solar radiation continuously maintained at Kew Observatory since 1932 form one of the few sources of information on solar radiation in the British Isles. These data have been summarised because of their many practical applications in several professions besides meteorology. The summary tables are grouped in two sets; one deals with data for direct solar radiation of normal incidence, the other with data for direct and diffuse short wave radiation from sun and sky on a horizontal surface. N.P.

Diurnal Variation of Pressure in the Mediterranean Area. H. Jameson. Air Ministry Met. Office. Professional Notes No. 105 M.O. 524e. 15 × 24·5 cm. 17 pp. London: H.M.S.O. 1952. 9d.

The purpose of this investigation was to produce tables to correct barometric pressures and tendencies in the Mediterranean sea for diurnal variation and this note is a discussion of the harmonic dials representing monthly changes in the 24-hour and 12-hour pressure oscillations in various areas of the Mediterranean sea and in neighbouring land areas. The harmonic dials of the 12-hour oscillation are compared with those for tropical marine regions. N.P.

Aviation Meteorology of the Route Castel Benito–Cairo. Air Ministry Met. Office. Met. Reports No. 5. M.O.496e. 15 × 24·5 cm. ii + 46 pp. London: H.M.S.O. 1950. 1/6.

This report describes, on the basis of air mass analysis, the meteorological regime of the eastern Mediterranean. The movement of depressions and fronts and the associated weather on the various sections of the air route from Tripolitania to Lower Egypt are described and for each section of the route visibility, cloud, wind, rainfall, temperature and humidity are discussed for the different seasons of the year. Tables of climatological summaries are given in appendices. N.P.

Die Geographischen Grundlagen und Probleme des Wirtschaftslebens. Rudolf Lütgens. 17·8 × 24·4 cm. 270 pp. Vol. 1 of Erde und Weltwirtschaft, ein Handbuch der Allgemeinen Wirtschaftsgeographie, 5 vols. Franckh'sche Verlagshandlung, Stuttgart. 1950. 24DM.

This is not just another textbook but, because of its comprehensiveness, method and skill of presentation, a landmark in the field of economic geography. The author, Emeritus Professor of Hamburg University and a well-known authority, presents here the harvest of his life's work based on world-wide travels and an intimate study of all relevant publications. The whole work will consist of five volumes: this, the first, deals with the geographical foundations and problems of economic life, and Volume 2, just published, with the geography of production. The further volumes will be devoted to the geographical aspects of agriculture and industry, commerce and communications, and, as the keystone, to man in so far as he is through his economic life an agent changing the earth's surface. Briefly, the volume in question centres round the guiding idea that the essential task of economic geography is the *study of the economic landscape*, i.e., landscape features in so far as they are related to economic life. A wealth of illustrations, clear table of contents, and pleasing style make the book easy to use even for somebody with little knowledge of German. K.A.S.

Geography and the Location of Industry. W. Smith. 14 × 21·5cm. 20 pp. Liverpool : Liverpool University Press. 1952. 2/–.

In recent years there has been built up a body of valuable geographical literature as a result of the development of the tradition of inaugural lectures by newly appointed holders of chairs of geography. Professor Wilfred Smith is well-known as one of our finest craftsmen in the field of economic geography and in this latest addition to the series of inaugural lectures he has naturally, and to our great profit, chosen to speak on a topic he has made peculiarly his own. A gracious tribute to his distinguished predecessors in the chair at Liverpool, and a brief confession of faith in the method and objectives of economic geography, introduce the main theme which is the presentation and illustration of the conclusions about factors in the location of industry that his sustained researches in this field have produced. In this slim pamphlet geographers have a masterly exposition of the order to which the seeming chaos of locational controls can be reduced and its permanent worth is in inverse proportion to its size. N.P.

Wirtschaftliche Raumordnung in der Industriellen Welt. Abhandlungen zur industriellen Standortpolitik. Erich Egner. 15·4 × 21·5 cm. 118 pp. Veröffentlichungen der Akademie für Raumforschung und Landesplanung ; Raumforschung und Landesplanung Bd. 16, Walter Dorn Verlag, Bremen-Horn. 1950. 4DM.

German economists have made many important contributions to the theory of location which no geographer should ignore. These include the classic work of H. von Thünen (1826), A. Weber's theory (1909), and the work of A. Lösch (1940). Egner's approach to the problem is rather more empirical aiming at immediate application and emphasising the social aspect. Optimum location he states, must be considered in relation to its human consequences. Economics and human ecology, which both have as their root-word *oikos* (= habitat) must be brought together to achieve the optimum result. The first two chapters discuss these principles ; the third outlines the methods adopted in different countries. This chapter will appeal more to the geographer than the former since on the whole a geographical approach is lacking. K.A.S.

Modern Geographers. An Outline of Progress in Geography Since 1800 A.D. G. R. Crone. 14 × 21·5 cm. 56 pp. London : Royal Geographical Society. John Murray. 1951. 3/6.

This interesting survey of the development of geographical studies is inevitably highly selective. Yet the fact that it is illustrated by portraits of von Humboldt, Ritter, Murchison, Vidal de la Blache, von Richthofen, Mackinder and Bowman, and that Sir Joseph Banks gets due honour, shows that Mr. Crone has tried to recognise many movements of thought. Von Humboldt's help to contributory sciences is rightly estimated as more fruitful than his " Kosmos," which, after all, inevitably belonged to the pre-Darwin era. Mr. Crone refers to Darwin's influence, but, like Hartshorne and others, does not quite see its effect in re-orientating the problems with which geographical studies cope. From a static they passed into a dynamic phase. The tribute to the French school is a particularly welcome feature as is also the appreciation of Bowman and of Miss Wrigley's obituary of him. Mackinder is carefully, yet sympathetically, estimated.
H.J.F.

Hugh Robert Mill. An Autobiography. 22 × 14 cm. xii + 224 pp. London. Longmans, Green & Co. Ltd. 1951. 18/–.

Mill came from a Scottish family which had already shown its quality by producing John Stuart Mill. Our famous geographical pioneer had to struggle against lifelong ill-health, but it is possible that he gained some of his distinction of outlook by missing ordinary school life and sport in his teens. We admire his work for the bathymetrical survey of British lakes, his efforts for the society's development of research during his librarianship of the R.G.S., his famous life work on the British Rainfall Organisation and perhaps most of all his unceasing help to explorers of the Antarctic, though his poor health never permitted exploration. He gave his fine library of books on Polar Regions to the Scott

Polar Research Institute at Cambridge where it forms a worthy memorial to him as the great authority on regions he could never see. Another memorial is the Hugh Robert Mill Medal of the Royal Meteorological Society, awarded on the first occasion, with unique appropriateness, to Mill himself.

To us in the Geographical Association, Mill makes a special appeal as practically a co-founder, with Mackinder and B. B. Dickinson, as a Herbertson Memorial Lecturer and as our President in 1933. He strove for geographical education and *The Realm of Nature* and the *International Geography* are but the chief of many of his efforts for our cause. His beautifully phrased addresses, delivered inevitably without notes, which he could not have seen, were triumphs of eloquent description and sympathetic understanding. Partial (later becoming total) blindness made him decline the invitation to become President of the R.G.S., and we who owe so much to him have to regret that public recognition of his work did not become more complete. His life was a long struggle against ill-health and yet he lived to his 89th year, rich in the affection of followers whom he had so lavishly helped in scientific work.

H.J.F.

This autobiography received earlier notice in these pages (vol. xxxii, 1947, pp. 166–168) when a mimeographed copy was presented to the library of the Association. We welcome its appearance in this delightful volume which can (and should) be read by all.—Ed.

Eighteenth Century Cartography of Cape Colony. Royal Dutch Geographical Society. 40 × 30 cm. 41 pp. + 20 maps. Cape Town: J. H. de Bussy, Ltd. 1952. £12 12s.

A little more than a year before the Van Riebeeck celebrations a large collection of manuscript maps of the Cape Colony was discovered in the archives of the Survey at Delft. These maps had been collected or produced during the Governorship of C. J. van de Graaff (1785–91) and many of them were previously unknown. From this collection maps have been selected for reproduction in atlas form in order to display and make better known the work done by Dutch surveyors during their exploration and opening up of South Africa. Because of the expense that would be entailed in distributing the complete work a special volume of specimens has been produced for review purposes; although there are only a few of the reproductions they demonstrate the excellence of the technique by which the fine manuscript has been portrayed. The complete text of the article by Mr. Koeman on the nature of the material found and the significance of the discovery for the history of the cartography of the Cape Colony is included. Perhaps the national associations of the occasion of the publication of this volume account for the author announcing, in italics, his major finding that "The oldest map of the Cape Colony that may claim the title is 15 years older than Barrow's map (Sir John Barrow was secretary to an English governor during the first occupation of the Cape by English troops) and is a product of Dutch cartography." In view of the fact that no adequate regional study of modern South Africa yet exists, it seems unlikely that this very expensive atlas will have more than a limited appeal to archivists and the very few specialist workers in South African history and exploration.

N.P. D.L.N.

Geographie. Johannes Petersen. 18·8 × 24·7 cm. 176 pp. Westermanns Studienhefte, Georg Westermann Verlag, Braunschweig, Berlin, Hamburg. 1949. 9DM.

This is a textbook which summarises the subject matter of geography as taught in German grammar schools. It also suggests various problems, and may thus serve as a foundation for university study. In judging its contents one must remember that geography in Germany is an obligatory subject aiming at giving a general background rather than specialised knowledge. Although very compressed it avoids, by skilful presentation, the danger of being a mere catalogue of facts. In its regional part it finds an interesting way out of the dilemma of political or regional subdivisions. It follows the latter wherever practicable, summarising the information applying to the States within such regions in a table. There are no photographs but otherwise the illustrations are to be commended.

K.A.S.

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